THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR OCTOBER 1868.

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TO READERS AND CORRESPONDENTS.

WANT of space has compelled us to postpone the insertion of several original articles and bibliographical notices prepared for this number.

All articles intended for the *Original Department* of this Journal must be contributed for publication to it *exclusively*. As original articles *are accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of November.

Compensation is allowed for original articles and reviews, *except* when illustrations or extra copies are required. A limited number of extra copies will be furnished to authors, *if the request for them be made when the communication is sent.*

The following works have been received:—

On Asthma: its Pathology and Treatment. By HENRY HYDE SALTER, M. D., F. R. S., F. R. C. P., Phys. to Charing Cross Hospital, and Lecturer on Prin. and Prac. of Med. at Charing Cross Hospital Med. School. Second edition. London: John Churchill & Sons, 1868.

On the Action, Use, and Value of Oxygen in the Treatment of Various Diseases otherwise Incurable or very Intractable. By S. B BIRCH, M. D., M. R. C. P. Lond., etc. etc. Second edition. London: John Churchill & Sons, 1868.

A Manual of the Pathology and Treatment of Ulcers and Cutaneous Diseases of the Lower Limbs. By JOHN KENT SPENDER, M. D. Lond., Surgeon to Mineral Water Hospital and to the Eastern Dispensary, Bath. London: John Churchill & Sons, 1868.

Miscellaneous Contributions to the Study of Pathology. By JOHN W. OGLE, M. D., Physician and Lecturer on Pathology, St. George's Hospital. (From the Author.)

On a Case of Death from Hemorrhage into the Pericardium, as a Result of Rupture of one of three true and circumscribed Aneurisms of the Coronary Artery of the Heart; with Observations on Aneurism or Aneurismal Dilatation as a Result of Embolism or Thrombosis. By J. W. OGLE, M. D., etc. (From the Author.)

Instances of some of the Rarer Varieties of Morbid Growths, Swellings, etc., connected with the Organs contained within the Abdominal Cavity. By J. W. OGLE, M. D., etc. (From the Author.)

Le Docteur au Village entretiens Familieres sur l'Hygiène. Par Mme. HIPPOLYTE MEUNIER. Paris: Libraire de L. Hachette et Cie., 1868. (From F. W. Christern, New York.)

On Diseases Peculiar to Women, including Displacements of the Uterus. By HUGH L. HODGE, M. D., Emeritus Prof. of Obstetrics and Diseases of Women and Children in the University of Pennsylvania. Second edition, revised and enlarged. Philadelphia: Henry C. Lea, 1868.

Atlas of Venereal Diseases. By A. CULLERIER, Surgeon to Hôpital du Midi, Member of Surgical Society of Paris, Chevalier of Légion d'Honneur, etc. Translated from the French, with Notes and Additions, by FREEMAN J. BUMSTEAD, M. D., Prof. of Venereal Diseases in College of Physicians and Surgeons, New York, etc. With about one hundred and fifty beautifully coloured figures, on twenty-six plates. Part 4. Philadelphia: Henry C. Lea, 1868.

The Science and Practice of Medicine. By WILLIAM AITKEN, M. D. Edin., Professor of Pathology in Army Medical School. Second American from the fifth enlarged and carefully revised London edition, adopting the new nomenclature of the Royal College

of Physicians of London. With large additions by MEREDITH CLYMER, M. D., Ex-Professor of Instit. and Practice of Medicine in University of New York, etc. etc. In two volumes, with a map, lithographic plate, and numerous illustrations on wood. Philadelphia: Lindsay & Blakiston, 1868.

A Theoretical and Practical Treatise on Midwifery, including the Diseases of Pregnancy and Parturition. By P. CAZEAUX, Adj. Prof. in Faculty of Med. of Paris, etc. etc. Adopted by Superior Council of Public Instruction. Revised and annotated by S. TARNIER, Adj. Prof. in Faculty of Med. of Paris, etc. etc. Fifth American from seventh French edition, by WM. R. BULLOCK, M. D. With one hundred and seventy-five illustrations. Philadelphia: Lindsay & Blakiston, 1868.

A Manual of Extracting Teeth. By ABRAHAM ROBERTSON, D. D. S., M. D., etc. Second edition. Philadelphia: Lindsay & Blakiston, 1868.

Diseases of Children: a Clinical Treatise based on Lectures delivered at the Hospital for Sick Children, London. By THOMAS HILLIER, M. D. Lond., F. R. C. P., Phys. to Hospital for Sick Children and to University College Hospital, London. Philadelphia: Lindsay & Blakiston, 1868.

The Physician's Visiting List for 1869. Philadelphia: Lindsay & Blakiston, 1868.

Constipated Bowels: the Various Causes and the Different Means of Cure. By S. B. BIRCH, M. D., M. R. C. P. Lond., etc. etc. From the third London edition. Philadelphia: Lindsay & Blakiston, 1868.

Vesico-Vaginal Fistula from Parturition and other Causes; with Cases of Recto-Vaginal Fistula. By THOMAS ADDIS EMMET, M. D., Surgeon-in-Chief of New York State Woman's Hospital, etc. etc. New York: William Wood & Co., 1868.

Microscopical Examinations of Blood; and Vegetations found in Variola, Vaccinia, and Typhoid Fever. By J. H. SALISBURY, M. D. New York: Morehead, Bond & Co., 1868. (From the Author.)

Criminal Abortion: its Nature, its Evidence, and its Law. By HORATIO R. STORER, M. D., LL. B., Fell. of Amer. Acad. of Arts and Sciences, and late Prof. of Obstetrics and Med. Jurisprudence in Berkshire Med. Coll. Boston: Little, Brown & Co., 1868.

The Present Problems in Abdominal Section: illustrated by a Successful Case of Double Ovariotomy. By Prof. HORATIO R. STORER, M. D., of Boston.

Dental Materia Medica. Compiled by JAMES W. WHITE. Philadelphia: Samuel S. White, 1868.

The Anatomy and Histology of the Human Eye. By A. METZ, M. D., Professor of Ophthalmology in Charity Hospital Med. College, Cleveland, Ohio. Philadelphia, 1868.

Conservative Surgery in its General and Successful Adaptation in Cases of Severe Traumatic Injuries of Limbs, with a Report of Cases. By ALBERT G. WALTER, M. D. Pittsburg, 1867.

Progressive Locomotor Ataxia. By WALTER COLES, M. D., Prof. of Diseases of Women and Children in the Medical College of Virginia.

Report of the President and Visitors of the Maryland Hospital (for the Insane, Baltimore), for 1867, to the General Assembly of Maryland, January, 1868. Baltimore, 1868.

National Department of Education. Official Circular No. 13.

Indiana State Medical Society, 1868. Report on Cholera. By GEORGE SUTTON, M. D. Aurora, Ind.

Ovariotomy: a Paper read before the Ohio State Medical Society, at its Annual Meeting, held at Delaware, June, 1868. By ALEXANDER DUNLAP, A. M., M. D., of Springfield, Ohio. Cincinnati, 1868.

Extra Digits. By BURT G. WILDER, M. D. Read June, 1868. [Extracted from the Publications of the Massachusetts Medical Society, Vol. II. No. 3.] (From the Author.)

Medical Communications, with the Proceedings of the Seventy-Sixth Annual Convention of the Connecticut Medical Society, held at New Haven, May 27 and 28, 1868. New Haven, 1868.

Transactions of the Medical Society of the State of Pennsylvania, June, 1868. Philadelphia, 1868.

Transactions of the New Hampshire Medical Society, held at Manchester, June 4, 5, 1867, and June 2, 3, 1868. Manchester, 1868.

Transactions of the Fifteenth Annual Meeting of the Medical Society of the State of North Carolina, held at Warrenton, N. C., May 20, 1868. Wilmington, N. C., 1868.

Proceedings of the Convention for the Organization of the Nebraska State Medical Society, held in Omaha, Nebraska, June 24, 1868. Omaha, 1868.

Proceedings of the Academy of Natural Sciences of Philadelphia. March, April, May, 1868.

Fourteenth Report upon the Registration of Births, Marriages, and Deaths in the State of Rhode Island, for the year ending December 31, 1866. Prepared by EDWIN M. SNOW, M. D. Providence, 1868.

The following Journals have been received in exchange :—

Vierteljahrschrift für die Praktische Heilkunde. Herausgegeben von der Medicinischen Facultät in Prag. XXV. Jahrgang, 1868. Band Dritter.

Bericht über die Fortschritte der Anatomie und Physiologie im Jahre 1867. Herausgegeben von Dr. J. HENLE, Dr. W. KEFERSTEIN, und Dr. G. MEISSNER, Professoren in Göttengen. Zweites und Drittes Hefter.

Deutsches Archiv für Klinische Medicin. Bd. IV. 1868.

Archiv der Heilkunde. 1868. Fünftes Heft.

Centralblatt für die Medicinischen Wissenschaften. Nos. 24 to 36, 1868, except No. 33.

Revue de Thérapeutique Médico-Chirurgicale. Nos. 12, 13, 14, 15, 17; 1868.

Le Mouvement Médical: Journal de la Santé Publique. Nos. 24 to 34, 1868, except Nos. 31 and 33.

La Tribune Médicale. Nos. 37, 40, 41, 43, 44, 45, 49; 1868.

Archives de Physiologie Normale et Pathologique. Juillet, Août, Septembre, Octobre, 1868.

Gazette Médicale de Paris. Nos. 14 to 23; 1868.

Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle. Anno III. Fascicolo 6.

The Half-Yearly Abstract of the Medical Sciences. January—June, 1868. London: John Churchill & Sons, 1868.

The Retrospect of Medicine. Edited by W. BRAITHWAITE, M. D., and JAMES BRAITHWAITE, M. D. Lond. January—June, 1868. London: Simpkin, Marshall & Co., 1868.

The British and Foreign Medico-Chirurgical Review. July, 1868.

The Medical Times and Gazette. July, August, September, 1868.

The British Medical Journal. July, August, September, 1868.

The Lancet. July, August, September, 1868.

The Journal of Cutaneous Medicine and Diseases of the Skin. July, 1868.

The Practitioner. July, August, September, 1868.

Edinburgh Medical Journal. July, August, 1868.

Dublin Quarterly Journal of Medical Science. August, 1868.

Medical Press and Circular. July, August, September, 1868.

Canada Medical Journal. June, July, August, September, 1868.

The Provincial Medical Journal. August, 1868.

The Dominion Medical Journal. September, 1868.

The Boston Medical and Surgical Journal. July, August, September, 1868.

The American Journal of Insanity. July, 1868.

The New York Medical Journal. July, August, September, 1868.

The Medical Record. July, August, September, 1868.

The Quarterly Journal of Psychological Medicine and Medical Jurisprudence. July, 1868.

The American Journal of Obstetrics and Diseases of Women and Children. August, 1868.

The Buffalo Medical and Surgical Journal. June, July, August, 1868.

The Medical Gazette. July, August, September, 1868.

The Medical and Surgical Reporter. July, August, September, 1868.

Half-Yearly Compendium of Medical Science. July, 1868.
The Cincinnati Lancet and Observer. July, August, September, 1868.
The Cincinnati Medical Repertory. July, September, 1868.
The Western Journal of Medicine. July, August, September, 1868.
The Chicago Medical Examiner. July, August, Sept., 1868.
The Chicago Medical Journal. July, August, September, 1868.
The Saint Louis Medical Reporter. July, August, September, 1868.
The Saint Louis Medical and Surgical Journal. May, July, September, 1868.
The Detroit Review of Medicine and Pharmacy. June, July, August, 1868.
The Humboldt Medical Archives. July, August, September, 1868.
The Leavenworth Medical Herald. July, August, September, 1868.
The Richmond and Louisville Medical Journal. July, August, September, 1868.
Atlanta Medical and Surgical Journal. May, June, July, August, 1868.
The Nashville Journal of Medicine and Surgery. June, July, August, September, 1868.
The New Orleans Journal of Medicine. July, 1868.
The Pacific Medical and Surgical Journal. June, July, August, 1868.
The California Medical Gazette. July, August, 1868.
The Galveston Medical Journal. May, June, July, August, 1868.
The American Journal of Pharmacy. July, September, 1868.
The Druggists' Circular and Chemical Gazette. July, August, September, 1868.
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The American Journal of Science and Arts. July, September, 1868.
The American Naturalist. August, September, 1868.
The Dental Cosmos. August, September, 1868.
The American Journal of Dental Science. July, August, September, 1868.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

All remittances of money and letters on the *business* of the *Journal* should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

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1. Felix Von Niemeyer's Clinical Lectures on Pulmonary Phthisis. Translated by J. L. Parke. pp. 116. 12mo. Moorhead, Simpson & Bond, New York, 1868.
2. On the True First Stage of Consumption. By Horace Dobell, M. D. pp. 75. 12mo. John Churchill & Sons, London. 1867.
3. On the Nature, Cause, and Treatment of Tuberculosis. By Horace Dobell, M. D. pp. 84. 12mo. J. Churchill & Sons, London, 1866.
4. On the Use of Perchloride of Iron and other Chalybeate Salts in the Treatment of Consumption. By James Jones, M. D. pp. 109. 12mo. John Churchill, London, 1862.
5. On Consumption and its Treatment by the Hypophosphites. By John C. Thorowgood, M. D. 8vo. pp. 47. John Churchill & Sons, London, 1868.
6. On the Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine. By J. Henry Bennet, M. D. 8vo. pp. 56. John Churchill & Sons, London, 1866.
7. Egypt and the Nile, considered as a Winter Resort for Pulmonary and other Invalids. By John Patterson, M. D., L. R. C. S. 12mo. pp. 84. John Churchill & Sons, London, 1867.
8. Change of Air, considered with regard to Atmospheric Pressure and its Electric and Magnetic Concomitants, in the Treatment of Consumption and Chronic Disease. By J. C. Atkinson, M. D. pp. 142. 12mo. Trübner & Co., London, 1867.
9. Phthisis and the Stethoscope; or, the Physical Signs of Consumption. By Richard Payne Cotton, M. D. pp. 104. 12mo. John Churchill, & Sons, London, 1868. 443
XV. Treatise on the Diseases of the Eye. By Stellwag Von Carion, M.D. Translated by Charles E. Hackley, M. D., Surgeon to the New York Eye and Ear Infirmary, etc. etc., and D. B. St. John Roosa, M. D., Clinical Professor of the Diseases of the Eye and Ear in the University of New York, etc. Illustrated by ninety-six wood-cuts and eighteen chromolithographs. 8vo. pp. 774. New York: Wm. Wood & Co., 1868. . 453
XVI. The Surgical Treatment of the Diseases of Infancy and Childhood. By T. Holmes, M. A., Cantab., Surgeon to the Hospital for Sick Children, etc. etc. 8vo. pp. xxvi., 648. London: Longmans, Green, Reader, and Dyer, 1868. 461

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XVIII. Transactions of the Obstetrical Society of London, for the year 1867. Vol. IX. With a list of Officers, Fellows, etc. 8vo. pp. 307. London, 1868. 489

XIX. Prof. Beale's Recent Histological Investigations.

I. New Observations upon the Structure and Formation of certain Nervous Centres, tending to prove that the cells and fibres of every nervous apparatus tend to form an uninterrupted circuit. By Lionel S. Beale, M. B., F. R. S., Professor of Physiology and Morbid Anatomy in King's College, London, etc. 4to., pp. 31, with 8 plates and 46 figures. London: John Churchill & Sons, 1864. From Proceedings of the Royal Society.

II. New Observations upon the Minute Anatomy of the Papillæ of the Frog's Tongue. By Lionel S. Beale, M. B., F. R. S., etc. 4to., pp. 14, with 2 plates and 23 figures. From Proceedings of the Royal Society, 1864.

III. Indications of the Paths taken by the Nerve-currents as they traverse the Caudate Nerve Cells of the Spinal Cord and Encephalon. By Lionel S. Beale, M. B., F. R. S. 8vo., pp. 10. From Proceedings of the Royal Society for 1864.

IV. Notes of Observations to ascertain the Ultimate Distribution of the Nerves of Gustation; their Ultimate Distribution not Terminal. By R. K. Browne, M. D., Professor of Physiology and Microscopic Anatomy in N. York Dental College, etc. 8vo., pp. 11, with a plate 498

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2. Address on the Relation of Food to Work done by the Body; and its bearing upon Medical Practice. Delivered at the meeting of the British Medical Association, at Oxford. By the Rev. S. Haughton, M. D., D. C. L., Oxon., F. R. S., etc. (British Med. Journ., Aug. 15 and 22, 1868.) 508

XXI. Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle. Compilato e Diretto dal Dott. G. B. Soresina, Ispettore Sanitario di Milano, etc. Colla Co-operazione del Sig. Dottori Albertetti Cav. Giacomo, Ambrosoli Carlo, etc. etc. Milano: 1867, Volumi III., IV.; e 1868, Gennaio e Febbraio.

The Italian Journal of Venereal Diseases and of Diseases of the Skin. Compiled and edited by Dr. G. B. Soresina, Medical Inspector of Milan, etc. With the Co-operation of Doctors James Albertetti, Charles Ambrosoli, etc. etc. Milan: 1867, Vols. III., IV.; and 1868, January and February. 525

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XXIII. Diseases Peculiar to Women, including Displacements of the Uterus. By Hugh L. Hodge, M. D., etc. etc. With Illustrations. Second edition, revised and enlarged. 8vo. pp. 531. Philadelphia: Henry C. Lea. 1868. 535

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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR OCTOBER 1868.

ART. I.—*Practical Remarks on the Treatment of Urethral Stricture, with a Description of a Modification of Holt's Instrument.* By FREEMAN J. BUMSTEAD, M. D., Professor of Venereal Diseases at the College of Physicians and Surgeons, New York. (With ten wood-cuts.)

DURING the eight months elapsing between September 1, 1867, and May 1, 1868, thirty-three cases of urethral stricture came under my charge, either in private practice or in my venereal service at Charity Hospital, Blackwell's Island, and I propose to found upon these cases a few practical remarks derived from personal experience, more especially with regard to some of the more recent methods for the treatment of urethral contraction.

Of these cases, eight, in which the stricture was seated at or near the bulbous portion of the urethra, and in which the contraction was but moderate, were treated by simple dilatation with bougies and sounds in the usual manner, and all of them terminated favourably, the dilatation being continued to the largest-sized instrument which the urethra would admit.

With regard to the instruments employed in dilatation, it would be extremely desirable if a uniform scale of sizes could be generally adopted. At present the Astley Cooper gauge, known also as the English and American, is in common use here and in England. In France, two gauges are recognized, that of Charrière and another of Béniqué. The Germans, I believe, employ sometimes the English and sometimes the French scale. The *Charrière-filière*, which is the one more generally employed in France, and which I shall refer to in the present paper as the "French scale," has divisions of one-third of a millimetre. It presents the advantages of a uniform scientific gradation and a more minute subdivision than obtains

in the American scale, and is worthy of being universally introduced. The highest number of this scale is 30; that is, an instrument with a diameter

Fig. 1.

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The French scale, division one-third of a millimetre.

of ten millimetres corresponding to about No. 18 of the American scale. The value of this and approximating high numbers in the treatment of stricture is very great, since their use contributes materially to the permanency of the cure.

In the catheter gauges in use in my own office, I have marked on the reverse of the plate the American numbers, as nearly as they can be made to approximate to the French. The correspondence of the two scales is as follows:—

French,	1,	2,	3,	4,	5,	6,	7,	8,	9,	10,	11,	12,	13,	14,	15,	16,	17,	18,	19,	20,	21,	22,	23,	24,	25,	26,	27,	28,	29,	30.
American,			1,	2,	3,		4,	5,		6,	7,	8,	9,	10,	11,		12,	13,		14,	15,	16,	17,		18.						

The irregularity of the American scale is here apparent.

Béniqué's scale is still more minute than the above, being based on subdivisions of one-sixth of a millimetre, No. 10 corresponding to No. 5 of the *filière* Charrière, No. 30 to No. 15, No. 60 to No. 30, etc.; but such a degree of minuteness appears to be unnecessary.

For the lower numbers of the Charrière scale, say all below 14, it is better to employ gum-elastic bougies in place of metallic sounds, since the latter, from their small diameter, are liable to give rise to false passages.

An abundant supply of bougies of suitable size and shape is an important requisite of the surgeon's armamentarium, and its absence is, I am convinced, the source of much of the injury often inflicted upon patients. The mahogany-coloured bougies, so commonly found in surgical cases, at hospitals and elsewhere, are almost useless from their stiffness and the impossibility of their readily adapting themselves to the natural curves of the urethra. The black bougies of *gomme élastique* are far preferable, their only disadvantage being the care required to keep them in good order, in consequence of their greater friability and their tendency to stick together in warm weather. The latter objection is effectually removed by occasionally dusting them with powdered soapstone, arrowroot, lycopodium, flour, or other similar powder.

The advantage of conical bougies with olive-shaped points, although long known, is not so universally appreciated as it should be, as evinced by the fact that these instruments have several times within the last year or two been brought forward as new. The bluntness of their points, which

prevents their engaging in the lacunæ of the canal, and the flexibility of the constricted neck, which facilitates their adaptation to the urethral curves, render their introduction both easy and safe even in the most inexperienced hands; and, again, the conical shape of the shaft materially promotes the process of dilatation. This form of bougie cannot be too highly recommended, especially to those who have had only a limited experience in the use of urethral instruments.

Catheters made upon the same principle, with conical extremities and bulbous points (Fig. 2), are admirably adapted to cases of retention of

Fig. 2.

urine dependent upon the enlarged prostate of old age or prostatitis, or upon ordinary organic or spasmodic stricture, if passable by anything larger than a filiform bougie.

The French "*bougies à boule*" afford the only means available (aside from the endoscope) of detecting slight urethral contractions upon which the persistence of chronic gonorrhœa or a gleet often depends. They are also of great value in determining the length of strictures, as well as the

Fig. 3.

Acorn-pointed bougie.

presence of a second contraction beyond the one first met with. The term "*à boule*" is inappropriate, since the point should not be spherical or olive-shaped, but rather be furnished with an abrupt shoulder, which affords the greatest delicacy to the touch in passing slight contractions. I have been in the habit of calling them "acorn-pointed bougies" (Fig. 3). Different sizes are, of course, requisite.

"Filiform bougies," the point of which is even smaller than one-third of a millimetre in diameter (No. 1 of the French scale), are indispensable in the treatment of tight strictures. The absurdity of the American scale is shown by the fact that its smallest number measures two and one-third millimetres, or seven times the diameter of the bougies referred to. Hence, the surgeon provided only with instruments corresponding to the American scale will find many "impassable" strictures which can readily be passed with smaller instruments, and, in cases of retention of urine, will be tempted to resort to uncalled-for violence or to puncture of the bladder. In the great majority of cases referred to me as "impassable" strictures by physicians in general practice, the first trial of a filiform bougie is found to surmount the obstacle.

The best French bougies are those made by Lasserre, No. 5 Av. Victoria,

Paris. Those sold by Weiss, in London, are superior in that they are not so adhesive, but they are much more costly.

From Nos. 14 to 30 inclusive, instruments either of steel, block tin, or fusible metal may be employed, and possess the advantage of their surface not yielding and becoming indented in the presence of a firm stricture. The curve, or rather double curve, known as Béniqué's (Fig. 4), the anterior curvature corresponding to the natural curve of the urethra at the peno-scrotal angle when the penis is in a flaccid condition, is a very

Fig. 4.

Béniqué's curve.

desirable one, especially with deeply-seated strictures. The extremity of the instrument should taper off for an inch and a half to two inches, so that its point may be two sizes smaller than the main body of the shaft. Thus the point will readily enter a stricture through which the next smaller size has already been passed, and we obtain the advantage of the principle of the wedge in promoting and hastening dilatation. The same plan enables us to dispense with the sounds of every other number in the construction of portable cases of small bulk.

Twenty-five of the thirty-three cases of stricture referred to at the commencement of this article were treated by rupture or by urethrotomy, either internal or external. This may seem a large proportion, but is not an unjustifiable one, in my own opinion. During the first eleven years of my practice I employed simple dilatation almost exclusively, except in the small proportion of cases in which, from the presence of perineal fistulæ, or other causes, perineal section was absolutely requisite. Subsequently I was led to make a thorough trial of Holt's method, and of the urethrotomes of Maisonneuve and others; and now, after five years' further experience, I feel fully convinced that the immediate treatment of stricture either by incision or rupture, is not only as safe as that by dilatation, but that it saves much valuable time, and that its results are more permanent and satisfactory. Instead of weeks, or even months, devoted to the repeated introduction of instruments, which cannot be said to be free from danger, the stricture is removed at one sitting with an amount of risk which I believe is even less than the aggregate of that incurred in dilatation; and the tendency to relapse is by no means so marked. Entertaining this opinion, I cannot but regard the opposition to operative procedures in cases of stricture as unfounded; and especially do I deem it unfortunate that the statement, which is said to have emanated from eminent surgeons, should have found its way into print, to the effect that strictures can as

well, or better, be treated by rest in bed and low diet alone, as by any other method.

Of the twenty-five cases of stricture referred to, there were treated—

I. Five by Civiale's larger or smaller urethrotome.
II. Three (ruptured) by Holt's instrument.
III. Eleven by Maisonneuve's urethrotome.
IV. One by Holt, and subsequently by Maisonneuve.
V. Two by Gouley's urethrotome.
VI. One (ruptured) by Thebaud's instrument.
VII. Two by perineal section.

It is not necessary for my present purpose to enter into the details of these cases. With the exception of five, the stricture or strictures were situated at least as far back as the peno-scrotal angle, and most of them in the bulbous portion of the urethra; the majority of them were old and neglected cases, in which at the outset only a filiform bougie could be passed, and none had a capacity greater than No. 9 French (No. 3 American).

I propose to speak of the instruments employed, and, of the many that have been invented, those most worthy of the confidence of the surgeon. The manner of using the instruments will also be considered. The immediate result, with a slight exception (one of abscess, to be hereafter mentioned), was all that could be desired. As most of the cases have passed from under my observation, I cannot of course testify as to the permanence of the cure, but I am still able to draw general conclusions from a portion of these and from other cases of older date occurring in private practice.

Civiale's Instruments.—These were employed in five cases in which the stricture was seated either at the meatus or within an inch and a half of the urethral orifice. Civiale's larger urethrotome (Fig. 5), which is straight, is

Fig. 5.

G. TIEMANN & CO.

Civiale's larger urethrotome, cutting from behind forwards.

especially adapted to contractions of the spongy portions of the canal; but in consequence of the size of the terminal bulb, cannot be employed in tight strictures without the preliminary use of some other instrument.

Fig. 6.

G. TIEMANN & CO.

Civiale's *bistouri caché*.

Civiale's concealed bistoury (Fig. 6) is admirably adapted for the division of

strictures at and near the meatus. In one of the above cases, a stricture at the meatus was so contracted as only to admit the finest of Anel's probes, and in order to enlarge it sufficiently to pass the *bistouri caché*, I first divided it with the minute probe-pointed knife, which is commonly employed for slitting up the canaliculi of the eyelids.

Holt's Instrument.—Holt's instrument for the rupture of stricture is now well known to the profession, and has acquired wide and deserved celebrity. My first trial of it was about five years ago, and I have now used it in upwards of thirty cases, in most of which it has proved highly satisfactory, and in none of which has there been any more serious consequence than moderate urethral fever, which has yielded to the hot bath and the exhibition of opium and quinia internally.

At the same time, it has been evident that the instrument, as originally proposed by Mr. Holt, possessed certain defects, and could be modified to advantage.

Others, as well as myself, soon discovered that the expansive power of the instrument was insufficient; that even when the largest tube was employed, there were some strictures which would merely stretch as it passed without being ruptured, and would afterwards tend strongly to return to their former condition. The remedy for this was evident, viz., to allow wider separation of the blades and employ larger tubes. This modification has sufficed for the purpose in most cases, although not in all. In one of the above twenty-five cases I employed the largest sized tube, with the immediate effect of being able to introduce No. 23 (French) sound, but, at the end of forty-eight hours, No. 17 was still firmly "held" by the stricture, situated at the bulb, when I had recourse to internal division with Maisonneuve's urethrotome, and no tendency to recontraction has appeared up to the present time—five months since the operation—the patient still continuing his visits for the purpose of observation.

But there was still another objection to Holt's instrument. The size of its point, which equalled No. 7 of the French scale, or No. 1 American, rendered it impossible to use the instrument in very narrow strictures until, by the successive introduction of filiform bougies, the requisite calibre had been attained; and even then the curve of the instrument was such that its insertion was not always an easy matter. Thus, after dilating the stricture with bougies up to No. 7 (French), I often found considerable difficulty in introducing a Holt, especially as the shaft of the instrument rapidly increases in diameter, so that practically a much greater degree of dilatation than No. 7 is required for its insertion to such an extent within and beyond the contraction as to enable us to use it for the purpose intended. This is evident on inspecting the instrument, which will be found to require a calibre of No. 11 (three and two-thirds millimetres= No. 4 American scale) in order that the introduction of either of the tubes along the central wire may have any effect upon the stricture.

To obviate this difficulty, Mr. Stohlmann, of the firm of Messrs. Tiemann & Co., at my request, changed the curve of the instrument, so that it should correspond to what is known as Thompson's curve. I also directed that the point should be made separate, so that it could be unscrewed, and in its place a filiform bougie could be attached (Fig. 7)

Fig. 7.

Fig. 8.

Holt's instrument, modified.

which should possess all the advantages of the conducting bougie of Maisonneuve's urethrotome, and enable me, with a little time and patience, to insert the instrument to the requisite extent in any case of stricture which was at all passable, and at a single session. Again, the central wire is made hollow, and in fact consists of a tube, the vesical opening of which terminates near the extremity of the instrument, anterior to the screw point, so that the flow of urine may indicate when the bladder has been entered. This, however, is a minor consideration with the bougie attachment, since any deviation from the proper course is now almost impossible. These modifications have been found to accomplish all that was desired, and will, I believe, materially increase the value of Mr. Holt's instrument.

I would add that the same bougies may be made to fit on to both Holt and Maisonneuve, so that the choice of the instrument need not necessarily be determined until after the conductor has been passed.

Thebaud's Instrument.—The instrument for the rupture of strictures, invented by my friend, Dr. Julius S. Thebaud, of this city, has not, I believe, been before described. In shape it corresponds to an ordinary sound, but the extremity of the instrument is split horizontally for a distance of about five inches, forming two blades, which are separated in a vertical direction by turning a screw in the handle (Fig. 9). There are

Fig. 9.

Thebaud's instrument for rupture.

two sizes; the point of the smaller has a diameter of four millimetres (No. 12 of the French scale); that of the larger, one of six and two-thirds millimetres (No. 20 of the French scale); hence it is evident that the

instrument cannot be used in tight strictures without preliminary dilatation or incision. In using the instrument, the extremity is passed fairly through the stricture, when the screw at the handle is turned until the contraction is felt to "give," or the desired amount of dilatation is effected, as indicated by a scale marked on the screw shaft.

This instrument is one of very great power and capacity. The larger one is capable of rupturing a stricture to a size much exceeding No. 30 of the French scale (No. 18 American). By measurement this power equals a sound of five-eighths of an inch in diameter. Compared with Holt, Thebaud's instrument has therefore the advantage of any desirable amount of dilating and rupturing power, and the disadvantage of not being adapted to tight strictures. This extreme power may render its use dangerous in unskilful hands; and there is the further objection that it requires some care to determine when the stricture is accurately caught to its full extent near the point of the instrument. Still, it is remarkable with what impunity the urethral walls will bear the apparent amount of violence which this instrument can exercise. I have used it in some fifteen to twenty cases, and Dr. Thebaud himself in about double the number, without unpleasant consequences. In one of those rare cases of pure spasmodic stricture which we sometimes meet with, I assisted Dr. Thebaud in introducing his larger instrument into the membranous portion of the urethra, and opening the blades to their fullest extent. The operation was performed on the same principle as leads us to rupture the sphincter ani in irritable conditions of the lower portion of the rectum. The tissues were felt to suddenly yield, doubtless in consequence of their rupture, but there was no subsequent chill, fever, undue hemorrhage, incontinence of urine, or other unpleasant consequence, and the patient was about attending to his business the following day. The spasmodic action was entirely relieved for over a year, but, as I have learned, subsequently returned. For a case of this kind no other instrument that I know of would have served the purpose.

I have found Thebaud's instrument of special value in cases like one before mentioned, in which the stricture had not been sufficiently ruptured by the use of Holt.

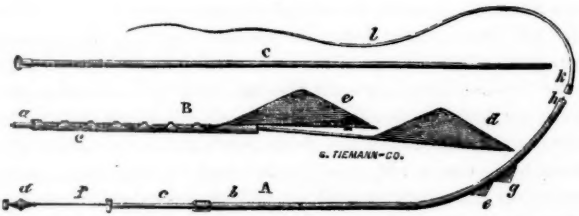
Before leaving the subject of instruments intended for the rupture of stricture, it is proper to refer to Mr. Thompson's instrument, although its inventor designed it rather for the rapid dilatation than actual rupture of the constricting band. I have not as yet made use of this instrument, but the principle of it is excellent, and I should judge it to be of great value whenever a timid patient refuses to submit to what appears to him a more violent procedure. It is evident that the dilatation may be carried to the point of rupture, and thus the same effect be produced as with either of the above named instruments.

Maisonneuve's Urethrotome.—This instrument is now too well known

to require description, and the reader of our current medical literature must have observed the numerous favourable notices of it, emanating from various sources, which have appeared during the last few years. In my own opinion, it is by all odds the simplest and the best urethrotome ever invented. Its filiform attachment enables it to be used in every stricture, however tight, through which the finest bougie can be passed; the bluntness of the apex of its triangular-shaped blades is well adapted to prevent any sound portion of the canal being wounded; and its simplicity renders it easily cleansed, and little liable to get out of order.

I desire to call attention especially to the first of these advantages, which is also shared by my own modification of Holt, as before described. A patient comes to your office with what appears at first to be an impassable stricture. After a while, however, you succeed in engaging the point of the filiform extremity of one of Maisonneuve's bougies within the contraction. Your patient is allowed to remain for half an hour, when the bougie will enter still further, and thus by the process of what has been called continuous dilatation, the apparently impassable stricture is soon enlarged sufficiently for the full and free passage of the fine bougie. This is now screwed to the end of the metallic shaft of Maisonneuve or Holt, which by the aid of one finger in the rectum may now be guided into the bladder, within which the bougie-conductor coils itself up as the shaft advances. It remains only to thrust down the knife or tube, as the case may be, and your patient is relieved of his stricture before leaving your office. This may seem to be making light of a serious operation, but it is what I have often done, especially with patients from a distance, whose stay in the city was necessarily limited. A hackney coach may be called to take the patient to his lodgings, and twenty-four hours' quiet in his room is usually sufficient.

Fig. 10.



MAISONNEUVE'S URETHROTOME, MODIFIED BY VOILLEMIER.—*A. g.* the triangular knife, sharp throughout; *e*, shield with blunt edges; *l*, filiform bougie. *B.* Knife and shield of full size. *C.* Flexible catheter, which can be screwed upon the filiform bougie, after withdrawal of the urethrotome.

One word as to the possibility of Maisonneuve's instrument wounding those portions of the urethra which are not contracted. I have had no reason to believe from my own experience that this ever occurred, but I have recently heard of a case, how true I do not know, in which the pa-

tient died of cholera two days after the operation, and at the post-mortem examination, the mucous membrane of the urethra is said to have been found "incised from the meatus to the bladder." If this case is authentic, I feel confident that the instrument itself was at fault, but any danger of this kind can be effectually removed by adopting Voillemier's modification, which consists of a shield that protects the blade until an obstruction is felt, when the shield is retracted, and the knife, which is made sharp at the apex, is pushed forward, and is again covered by the shield as soon as the stricture is divided.

With regard to the pain inflicted in either of these operations, by Holt or Maisonneuve, it is not severe, and except with very timid patients does not require the use of an anæsthetic. It has seemed to me to be decidedly greater with rupture than with urethrotomy. In cases of the latter, it is not unusual for the patient, surprised at the completion of the operation, to inquire, "Is that all?"

The treatment of the patient subsequent to the operation is of importance, and I have endeavoured in my own cases to interfere as little as possible with the parts for the first few days, believing as I do that we were formerly inclined to interfere altogether too much. Either before the operation or immediately after the withdrawal of the urethrotome or rupture instrument, I make it a point to divide the meatus, unless it is naturally of a large size, either with a knife or Civiale's *bistouri caché*. This is essential for the subsequent employment of sounds of sufficient size to fully distend the canal and to secure all that has been gained by the operation. Before leaving the patient a careful exploration of the canal may be made, if the surgeon so chooses, but it is not necessary, and if there is more than a small flow of blood, or if the sound appears to catch in the wound, it is positively contraindicated.

It is indeed satisfactory, and adds to the brilliancy of the operation to slip in a No. 26 or 28 sound through a canal which just before admitted only No. 1. But what is gained for the patient thereby? We have felt the stricture give on the passage of the rupture tube, or we have seen the stem of the urethrotome disappear until the knife must have entered the bladder, and we *know* that there is now a pretty free opening into that viscus. Any interference with the wound can do no good, and may produce irritation or favour hemorrhage. If, possibly, the natural calibre of the urethra has not been quite completely restored, we shall discover the fact two days after on using the sound, and the operation is so simple that it may be repeated if necessary, or another instrument of greater efficacy, as Thebaud's or Civiale's, be then employed.

Again, with regard to leaving an instrument in the canal after the operation, my own course differs from that of many authorities. Maisonneuve, I believe, especially insists on a catheter being retained for twenty-four hours after the use of his instrument, until the edges of the wound are

"glazed over with lymph," so as to lessen the danger of urethral fever. I have never resorted to this course after rupture or internal urethrotomy, and the omission has not been productive of any evil consequences. If the patient has not evacuated his bladder a short time before the operation, the urine may be drawn off by a small flexible catheter adapted to screw on to the conducting bougie before the latter is withdrawn from the canal (*cathétérisme à la suite*). A suppository containing a quarter of a grain of morphia is now to be inserted within the anus; the internal administration for a few times of a grain of the sulphate of quinia and ten drops of laudanum, as recommended by Holt, every four hours, is desirable; the patient should be directed to abstain from passing his urine as long as possible, and keep quiet at home until the following day, after which, if nothing untoward has occurred, his liberty may gradually be increased.

The end of forty-eight hours is early enough to pass a full-sized sound in order to maintain the patency of the canal. This should be repeated every second or third day for ten days or a fortnight, after which two or three insertions at intervals of a week are desirable, and if the patient live at a distance, he may be taught to use the sound himself. More frequent insertion of instruments is likely to do harm; and, indeed, in view of my former belief and practice in this respect, I have been surprised to find how little was absolutely required. One of my patients the past winter was an immense, stalwart, but very timid German, who had a very tight stricture, and would only consent to be operated upon under ether. I employed Maisonneuve's urethrotome, and as the flow of blood following was a little free, I did not pass a sound after the operation. Upon proposing to do so two days afterwards, the man absolutely refused to have it done, saying that he could make a better stream than any other man in the ward. Partly for the sake of experiment, I consented to let him alone. He remained in the hospital for six weeks, and I satisfied myself by actual observation at the time of his leaving that his stream of urine had not diminished, although no instrument whatever had been passed since the operation.

At the same time, I am not over-sanguine with regard to the permanence of the cure after any mode of treatment, in the absence of prolonged attention. It is true that I have still patients under observation, operated upon four or five years ago, in whom there is no tendency to relapse, as shown by the size of the stream and the freedom with which a sound may be passed. But from what we know of the pathological anatomy of strictures, and from the evidence afforded by casts of the canal some time after the passage has been freely opened, it is evident that the tissue of new formation does not entirely disappear even on the supposition that it is materially diminished. Moreover, cases will return to disappoint us when we had hoped for better things. I am to operate on a case again to-morrow in which I divided two strictures with Maisonneuve last October—one seated about three-fourths of an inch from the meatus, the other in the

sub-pubic curvature. The patient's meatus was small, and I carelessly omitted to slit it up. He lived at a distance, and was unwilling to pass the sound himself. Although I have seen him about once a month since, and passed instruments, yet the tendency to contract is so marked that it is evident another operation is required. I look upon division of the meatus, and the subsequent use of the largest practicable sounds (rarely less than 27) following the operation, as affording the greatest attainable security; but still every man who has had a stricture should be cautioned to keep himself under the observation of his surgeon for a year or longer, and never forget the possibility of a relapse.

In expressing the opinion that the immediate treatment of stricture, whether by rupture or internal division, was safe, I have been fully aware of the accidents that have been reported. Death has been caused by the use of Holt's instrument, but it has also been produced by the simple passage of a catheter. A safe operation is understood to be one comparatively so. A man with a stricture runs less risk in having it treated than in letting it alone, and, of the different modes of treatment, I believe that rupture and internal urethrotomy are as safe, if not safer, than any other. Neither in the cases which form the text of this paper, nor in the many others of which I have unfortunately kept no full record, have I met with any serious accident. The only decidedly disagreeable consequence was the formation of an abscess at the peno-scrotal angle in a patient operated on at the hospital, and this occurred ten days after the operation, and followed the somewhat violent introduction of a sound by one of the house staff. The abscess closed kindly without leaving a fistula after being opened, and the patency of the canal was not impaired.

I have thus far expressed no preference between the different operations and instruments alluded to. To be wedded to one exclusively, would appear to be as senseless as for a surgeon to decide to use but one form of knife or scissors in all his operations. *A priori* reasons would lead us to prefer urethrotomy in the anterior portions of the urethra, where strictures are firmer, and where hemorrhage and other accidents are less likely to occur, or, if occurring, are more readily controlled; the contrary conditions would favour rupture in the sub-pubic curvature; at the same time I have practically found internal division perfectly satisfactory in the latter region, as performed by Maisonneuve's instrument.

I have been led to make the present communication partly from a desire to put on record some opinions contrary to those which I formerly expressed (*Pathology and Treatment of Venereal Diseases*), and also from the conviction that if those enjoying a field for observation in any specialty would oftener make known the standpoint at which they have arrived, and entertain less fear of being called inconsistent even if time and experience have changed or should change their views, our art would be the gainer.

162 W. TWENTY-THIRD ST., NEW YORK.

Art. II.—*An Examination into the Truth of the Asserted Production of General Diseases by Organized Entities.* By Horatio C. Wood, Jr., M. D., Professor of Botany in the University of Pennsylvania.

Of the many subjects which claim the attention of the medical inquirer, there are few the importance of which is greater than that of the causes of disease. It seems both natural and philosophical to believe that disease is not an inherent necessity of the organism; that the physical machinery of the system was so constructed originally that it should, under proper conditions, run smoothly through its allotted period, and gradually wear out, falling to pieces at last almost as did the century chaise of our New England poet. Unfortunately, however, every one well knows how few die thus in ripe old age. The sources to which disease can be traced in our modern life are legion: over-work, over-excitement, alcohol in some of its forms, gluttony, and a host of other evident causes of disease are but too apparent.

There are, however, numerous affections, the sources of which are not so evident. Most of the serious, acute, general diseases may be readily traced back to the introduction of a poison into the blood, but the exact nature of such poisons is still an open question. The greater number of such diseases may be grouped for study under two heads, namely, the epidemic and contagious; the one comprising those in which the poison, although giving origin to a definite train of symptoms, does not in so doing undergo increase; the other, those in which it is increased during the morbid processes established, so that the mere speck of contagium gives origin to an infinitude of particles endowed like itself. Malarial intermittent may be taken as the type of the former, smallpox as that of the latter class. In each of these cases the poison is apparently material. What then is its nature? Is it organic or inorganic? The connection between organic matter and the virus of smallpox or the poison of malaria is so close as to render very improbable any hypothesis which considers such morbid poisons as inorganic in their nature. If they be then organic, are they organized entities, or are they organic principles, or simply states of some living unorganized matter, or, to place the question in the form in which it is to be looked at in this essay, are the poisons of contagious and epidemic disease organized entities, or simply organic?

The idea that these poisons are living organisms is not a new one. The opinion that the deleterious nature of malarial air was owing to the presence of animalcula dates back at least to the days of Lucretius and Varro. It was revived and warmly upheld in modern times by the great Linnæus, who wrote a work in its favour.

Following this greater light, numerous lesser ones have attempted to establish and illuminate this theory. Most curious and quaint are some

of the passages in their works, as an example of which may be cited the following from Dr. Adam Neale's "*Researches to Establish the Truth of the Linnæan Doctrine of Animate Contagion.*"

"During the Pontificate of Clement VI. a cruel pestilence raged, which destroyed two-thirds of the human race. Villanius, the historian, says, also, that it commenced in Upper Asia, in Cathay, in 1346, from a most filthy smelling vapour, supposed to proceed from a certain fiery body, which either fell down from the atmosphere or was eructated from the earth; that this vapour, like a fire, consumed all that stood in its way, animals, houses, trees, etc., for the space of fifteen days' journey all round, and most filthy little beasts furnished with feet and tails, and a small sort of snake in a numberless multitude fell at the same time from the atmosphere upon the earth, the stench and putrefaction from which infected the very air and all the region round."

Dr. N. afterwards gravely states the "filthy beasts" were most probably "the larvæ of Eristalis tenax." An irrefragable proof of his theory!

Even the microscope has been appealed to, and Whitehead tells us to add water to pus until the globules burst, and says, upon the authority of Bourgnignon, "if the attention remain fixed for a time upon the objects, a multitude of animalcules will be seen moving in the field of the microscope."

The discovery of the itch insect strongly confirmed this animalcular theory, and, indeed, seems to have been thought by many fully to establish it. One writer of the period states that he believes the Scottish skin disease, sivvens, to be a hybrid between syphilis and the itch, that the male of the syphilis insect copulating with the female itch insect produces an animal, which gives rise to a disease in which both of its ancestors' lineaments are discernible.[1]

This animalcular theory is even still held by at least one very respectable medical writer, and has been taught within a few years by some of the ablest medical teachers of the country, otherwise it would seem hardly worth while to attempt its confutation. Combating it is like striking at a shadow. No one now professes to have seen these pestilential creatures, and, indeed, the only argument in favour of their existence worthy of consideration, is the reputed fact of the travelling of the cholera poison against the wind, which is said to necessitate the possession of the power of locomotion by the poison. How, then, are the various contagiums carried from point to point? Evidently simply by the power the air has of floating little masses of matter.

The dispersion of composite and other seeds; the curling smoke; the begrimmed houses of a Manchester or a Pittsburg; the dust storms in mid-ocean; the clouds of pine-pollen miles away from the forests which produced them; the dust everywhere, in which the microscopist finds almost everything represented; all these are familiar proofs of the existence of such power. It is worthy of remark, that no solid non-volatile particles

[1] See Adams "On Morbid Poisons," p. 179.

are known, whether inorganic or organic, or vitalized organisms, which have the power of actively dispersing themselves in the air. All, so far as known, are either raised into it and scattered, in accordance with ordinary physical laws, or are lifted up, as it were, by some volatile substance with which they are combined; as, for instance, the heavy particles of the carbonate of lead, in a newly-painted room, by the volatile spirit of turpentine with which they are associated.

If the asserted travelling of cholera alluded to be true, it seems necessary to account for it by supposing it to be caused by very high currents in the atmosphere running counter to those at the surface of the ocean.

Hundreds of observers have been carefully examining for many years vaccine and other viruses, cholera stools, &c., and have failed to find the contagion-animalcule. More than this, as above stated, no animalcule endowed with the requisite motor powers is known. If such a creature were a possibility, it would have to be formed upon an entirely new *type of structure*, and would constitute a distinct class or order of itself. All known protozoa move either in virtue of vibrating cilia or flagella, or by means of the alternate contraction and expansion of the whole or of a portion of their bodies.

The former of these means of progression requires a dense resisting medium like water: the second a fixed surface or some fixed points, to which the advancing part may cling. To imagine a protozoon, with wings wide-spread, and pectoral muscles in vigorous action, certainly requires a considerable effort. For similar reasons to these the animalcular theory is now generally abandoned as untenable, but it is worthy to be noted that it is *negative evidence* which has overthrown it.

Judging from the current literature, there is at present in the professional mind a strong tendency to assign as the cause of various diseases, the entrance into the blood of protophytes or low plants. Amongst the affections believed to have such origin are the various intermittents; and, when one looks at the positions whence malaria comes forth and the conditions necessary to its generation, the probabilities of its having a vegetable origin certainly appear very strong. The sequence of the symptoms, and the entire natural history of miasmatic diseases are so diverse from those of other affections and at the same time so similar in all their varieties, that it would seem as though there must be a common cause—a cause, too, essentially different in its nature from that of the exanthemata. The favourite haunts of the malarial poison are swamps; the half-drained marsh; the alluvial bottom, with its deep mould soil, &c.; and because in such places various low algæ flourish, the idea has very naturally arisen that they are the excitants of intermittents.

On few medical subjects has there been more loose, illogical writing than upon this. As an instance, it is allowable here to quote a passage

from Dr. Morris' work on the Germinal Matter Poisons (p. 83), a book which in most other points is carefully and logically written.

"Thus attributing, as is now generally done, ague and the other malarious fevers to fungi or confervoid plants, like the palmellæ, whose little spores, we might perhaps say whose little selves, rise into the air in enormous numbers with the watery vapour, when the sun acts upon the marshy soil, or malarious silt at a certain stage of desiccation, the malaria, the bad air, being simply air in which these are more or less diffused. . . It would seem that these spores, as they exist in the most deadly malaria, grow, and that with great rapidity, on the membrane of the capillaries of the air-cell, passing from time to time into the blood. This theory of ague gets rid, in great part, of a puzzle of antiquity—the cause of periodicity of ague, which is brought under the known laws of the periodicity of vegetable development. A little explanation is here necessary. Philosophical botanists tell us that plants, with all their exquisite variety of leaf and flower, consist merely of the axis and the appendage of the axis. The simplest means are thus made to attain results of surpassing beauty. The plan of the vegetable is alternate free and restricted cell-development. This law extends to the lowest forms. Those plants which are mere cells do not develop uniformly, but with alternations of free and restricted growth, and this is so, quite independent of light or darkness, damp or drought, heat or cold. So that when we find the symptoms of ague to be intermittent, and contrast them with the continuous development of the germinal-matter diseases, we have confirmatory evidence of vegetable causation. Fortunately for the human race, *quinine*, while harmless to man, is *fatal to those minute organisms*." (pp. 83, 84.)

Under the apology of "it would seem," the fact is here asserted that these spores grow upon the membrane of the capillaries of the air-cells of the lungs and pass from time to time into the blood. Does Dr. M. mean to assert that *he himself* has so seen them? The context and mode of expression certainly answer no. Where, then, is his authority? Numerous microscopists have studied the pigment matter in malarial blood, why have they not seen the spores? Such assertions, made without giving the personal or other authority, cannot be too strongly reprobated. Again, that "the plan of the vegetable is alternate free and restricted cell-development" seems very much like philosophical nonsense. I have studied pretty extensively the life history of these low plants both as detailed in books and as they live and grow in nature, and feel warranted in asserting most positively that there is nothing known in the natural history of these protophytes that in any way is capable of throwing light on the "puzzle of antiquity." On first reading of the antagonism between quinia and these low plants, there were growing in the window near by, three species of palmellæ. Masses of these were placed in a solution of the sulphate of quinia of the strength of one grain and a half to the ounce. After the lapse of some weeks, no difference is perceptible in the vigour of their growth, and in that of those in a vessel of simple water near them, all of the plants are in a very healthy state; the quinia has apparently exerted no influence whatever upon them.

A very elaborate attempt to prove that palmellæ are the essence of malaria, is that of Prof. Salisbury in the January number of this Journal for 1866. His results may be summed up in a comparatively few words: on exa-

mining the salivary secretions of those labouring under intermittent fever, he finds among a great variety of "zoosporoid cells, animalcular bodies, diatoms, dismidiæ (*sic.*), algoid cells and filaments, and fungoid spores," constantly in "great abundance, minute oblong cells, either single or aggregated, consisting of a smooth cell-wall, with a highly clear, apparently empty space between the outside cell-wall and nucleus," which he concludes from their appearance are not fungoid, but cells of an algoid type, resembling strongly those of the palmellæ. He satisfies himself that these minute cells were the only forms found that could be relied upon as constantly present in malarial levels and not present above them. He looks for these in various ague localities, and finds them, apparently, in every case; of this he gives a large number of instances.

Finally, as the *experimentum crucis*, he digs up a mass of bog earth on which the plants are growing, and placing this where certain persons will be exposed to its effluvia, finds that they take intermittent fever, and hence reasons that the cryptogam is the cause.

Putting the most liberal construction on these results, they simply prove that certain palmellæ grow on wet damp soils, such as exist wherever malaria is found, and that in the soil somewhere is the poison. Both well-known facts. What is wanted, is proof that the *plant* will produce the disease, not the *plant and soil together*. If Dr. S. will grow the palmellæ, removed from the bog earth, and with their progeny induce intermittents, then, and not till then, will he have demonstrated what he seeks to prove. Is it conceivable, remembering that diffusion takes place simply by mechanical means, that these minute bodies should extend upward only to a certain height, the "summit ague line," "whereas diatoms" (large siliceous organisms), "dismidiæ (*sic.*), fungoid spores, and animalcular bodies" are found in greater or less abundance above this line? Prof. S.'s descriptions of his genera and species are so vague and destitute of character that it is impossible to settle the question of identity or to make any approach thereto; but I can state that Prof. Leidy has slept for months with various species of palmellæ growing in masses near his bed, and that I myself have lived with them and swallowed them, purposely and by accident, by thousands, and yet in neither case has any trace of intermittent made its appearance, although the writer had a few years since eight or ten separate attacks of malarial disease, and therefore may be considered susceptible.

For these reasons, it does not seem unreasonable to demand, before giving our assent to Prof. Salisbury's theory, first, confirmation of his experiments; second, some proof that the plant by *itself* is capable of producing malaria.

There are various points in the life history of the palmellæ which make it almost impossible that they constitute malaria, or at least render it so very improbable as to require the most positive proof before it can be

accepted. None of the palmellæ are known to be parasitic in the proper sense of the term. Unlike the fungi, they do not grow in situations where the light does not have access to them. The reasons for these two facts are obvious: a fungus feeds on organic matter, and is consequently fitted to be a parasite, and is independent of light; whilst the palmella, feeding only on inorganic matters, has to decompose and recompose these into organic compounds by means of its chlorophyllous protoplasm. This it can only effect by the aid of light. How could such plants flourish in the interior of the body?

Again, frost lays a heavy hand upon malaria. Yet of all known organisms the palmellæ are pre-eminent amongst those over which extremes of heat and cold have little influence. I have specimens which grew in water of a temperature from 130 to 160° F. On the other hand, freezing appears to have no effect on them. I have often seen them living and apparently growing in the centre of icicles on the rocks. There are now in very active life in my window various species of palmellæ which have alternately been frozen and thawed a number of times during the past winter. The bloody snow of the old Arctic navigators is a familiar example of their hardihood; the red colour, it is well known, being caused by the presence, in very active, growing life, of a species of palmellæ.

Further, vegetable decomposition is an acknowledged necessity for the generation of malaria. Not so in the growth of palmellæ—they are independent of it. They grow everywhere, in the mountain, on the plain, *in the city*, in the bog; wherever moisture and light are, there may they be found. Their *presence* in malarial districts is a simple necessity of their laws of growth; their *absence* would be a startling circumstance.

In view of the total absence of any proof of genetic connection between palmellæ and malaria, the above given reasons seem sufficient to establish the fact that there is no such relation.

The life history of the fungi is so diverse from that of the palmellæ that many of the arguments just given do not apply to the proposition that certain fungi are the causes of intermittents. Thus they will grow in the dark, and they do not resist the action of cold to such an extent as the algæ. Nevertheless there seems to be enough evidence to exculpate them from the charge of constituting the various blood poisons. In the first place the supposition that they are the essence of malaria is purely gratuitous. There are no known facts which prove it. Who has ever found them in the blood of a patient suffering from disease of this character. On the other hand, there is much positive evidence against the probability of such explanation of the causation of intermittents.

Thus fungi flourish everywhere, provided only the conditions of growth are present: if there be a mass of decomposing matter in the city, it will be covered with fungi just as quickly as though it were in the country, showing that the spores are equally present in the air. Again, if the ex-

istence of fungi in the blood were the cause of the paroxysms, how could intermittents be cured save by the long-continued exhibition of some remedy capable of exerting a poisonous influence upon them? Further, there are in certain of the lower animals diseases undoubtedly caused by or at least connected with the presence of fungi in the blood, and the history of these diseases differs *in toto* from that of intermittent. This will be developed more fully in the latter part of the article.

If malaria be not then some organized being, some protophyte or protozoon—what is its nature? Is it some hidden odylic force, or is it an organic product or educt? Are there any facts which throw light upon this problem?

The genetic connection between malaria and the decomposition of vegetable matter is so well established that it is allowable here to take it for granted. If any one has any doubts upon this subject, he is respectfully referred to the article on Malaria in *Aitken's Science and Practice of Medicine.*

There is a disease which, although very different from intermittent fevers, seems to result from a cause in some degree related to or parallel with that of the latter. This is the so-called Hay Fever. In two cases which I have studied, the symptoms come on at about the time malarial fevers are to be expected, are more or less regularly intermittent, the patients having their alternate "well and sick days," and the disease is immediately arrested by frost. In one of these cases for a succession of years the attacks of hay-fever, which was not simply intermittent bronchitis, each year ended in a well-marked intermittent fever, or at least in a febrile attack assuming the ordinary features of a malarial intermittent. Further, the hay-fever poison and malaria are both least active in cities, and are connected with vegetation; they are both most operative in the latter part of summer, and both seem to be influenced by frost. Such are the points of resemblance; they are by no means sufficient to render probable genetic identity, but do seem to point towards similarity of nature of cause. What then is the nature of the hay-fever poison? It appears not to be any one plant or any one tribe of plants which gives origin to it. It cannot always be pollen, for in many cases plants not in flower are as irritating as those in full bloom. Indeed, the proof of its ever being simply pollen seems wanting. When smelling a rose produces it, what proof is there that it is not some emanation from the petals, especially so when we remember the very small amount of pollen produced in any ordinary double rose, in which the stamens have been converted into petals. Proximity to the forest, to the meadow-grass, to the salt marshes, to the garden, appear to be equally unbearable to many sufferers. In one of the cases alluded to, a watermelon brought upon the table would produce such violent symptoms as speedily to drive the patient out of the room.

The theory which ascribes the production of hay-fever to various effluvia, probably organic principles, seems at present the only tenable one. Dif-

ferent persons are probably similarly affected by different effluvia; the one by that given off by the rose; the other by that of ipecacuanha; the third by that from any green thing, and so on; which fact this theory seems well to harmonize with.

It is well-known that in certain persons the mere proximity to the common poison vine (Rhus toxicodendron) will produce an erysipelatoid inflammation of the face, hands, etc., without actual contact. This, until recently, was almost as mysterious as the production of intermittents, but now, thanks to Prof. Maisch, the poison is known to be a definite, volatile, organic principle—toxicodendric acid.

Taking into consideration all the facts passed in review, it seems most probable that the poison of malaria is an organic principle, or possibly several principles produced during vegetable decay under certain conditions. The idea that it is an effluvium from various algæ has long been held on the continent of Europe. This is not so absolutely untenable as the theory of Prof. S., and must be carefully distinguished from it. According to the latter the minute unicellular algæ rise into the air, and act, as it were, parasitically upon the blood; according to the former theory the larger fresh-water confervoideæ, and, indeed, plants scarcely to be classed as algæ, the characeæ, exhale a subtile volatile poison, they themselves being much too gross to be carried freely in the air. In a recently published letter Prof. Hannon says:—

"In 1843 I studied at the University of Liege. The windows and mantelpiece of my chamber were encumbered with plates filled with vaucheria, oscillatoriæ, and confervæ. My preceptor said to me: 'Take care at the period of their fructification, for the spores of the algæ give intermittent fever; I have had it every time I have studied them too closely.' As I cultivated my algæ in pure water, and not in the *water of the marsh where I gathered them*, I did not attach any importance to the remark. I suffered for my carelessness a month later, at the period of their fructification. I was taken with shivering; my teeth chattered; I had the fever, which lasted six weeks."

Such testimony as this would go far to substantiate the connection between the growth of algæ and miasm, were it not evident that Prof. H., spent much time in the marsh alluded to in gathering his plants, and, in so doing, was very much exposed to the malarial poison therein existent in its most concentrated form.

The period of fruiting of the algæ, in this country at least, does not coincide with the prevalence of intermittents. The vaucheria, mentioned in the letter, fruit in the early spring and summer, as do most of the confervæ, whilst no one has yet seen the fructification of the oscillatoriæ, either in this country or Europe. During the last two years the cultivation and study of the fresh-water algæ has occupied most of my leisure, and my room is often crowded with them, but no intermittent has been produced.

The experience, however, of the British in Wallachia, seems enough to set at rest the whole question of the genetic relation of malaria and algæ. The troops were encamped on a plain, whose surface was composed of

sand, so dry that no vegetation could exist upon it, save some stunted heath plants. Below this surface stratum, however, was a mass of delta-soil, constantly wet and filled with organic matters. It is evident that algæ could not grow in this under soil, their whole natural history forbidding it, but the circumstances were most favourable for vegetable decomposition, and as a consequence the most malignant malarial diseases decimated the troops.

Yellow fever closely resembles, in many respects, some of the more deadly forms of malarial disease, and as a sequence to the labours of Dr. Salisbury come very naturally those of Dr. Schmidt.[1] If one establishes his point, the position of the other is thereby very sensibly strengthened.

The observations of Dr. Schmidt seem to have been made with care, and are interesting. They show, however, nothing more than the wide-spread presence of organic spores during the prevalence of the fever, and great rapidity in their development in the streets. Is not this always the case, in a dirty city, during a hot damp summer? He found monads, vibrios, and protococci present in specimens of black vomit, none of them, however, constantly so. He claims, however, as constantly present, as follows :—

"Independent of these granules, however, there is another kind, which almost always aggregated in masses, are met with throughout the matter. The inexperienced observer might easily take them to be a collection of granules from the epithelium, or for masses of dead monads, but they are neither of these. The granules in question have very dark and thick outlines with a very clear and rather refractive centre, and when collected in large masses assume a greenish tint; not merely are they found aggregated to form free masses floating in the liquid or upon those patches of epithelium, but they are also observed in smaller groups adhering to the individual epithelial cells. When I first noticed these granular masses, I knew not where they came from, for I was certain that they belonged not to the elements I have above referred to; soon, however, I saw others here and there among them of more or less larger diameters; at the same time there were double ones, and also fully-grown spores of fungi. I remained no longer in doubt about the nature of the dark-bordered granules.

"The masses of germs were always present. Sometimes the whole mass consisted already of spores twice the diameter of the granule. The smallest germs have a diameter of about $\frac{1}{5000}$ths of an inch. They then enlarge to be developed into a mature spore which consists of an oval cell of about $\frac{1}{1500}$ths of an inch long and $\frac{1}{1500}$ths of an inch wide. The filamentous tubes developed from the latter vary in thickness, but their mean diameter is about $\frac{1}{5000}$th of an inch. The sporules originate by free cell formation and within the tubes of the fungus."

The identity of the dark-bordered granules and the larger fungal spores ought to be fully proven before being accepted, since the usual plan is for such spores to be fully formed before being set free from the parent plant. Moreover, to establish as a fact, their universal presence in black vomit would require the finding of them as constant, by *different* observers, in different places and in various epidemics. Let it be allowed, however, for the sake of the argument, that Dr. Schmidt has shown that they are invariably present in that fatal fluid; even then, he has no more proven them

[1] Researches into the Pathology and Cause of the present Epidemic, ordinarily called Yellow Fever. *Southern Journal of the Medical Sciences*, November, 1867.

to be the *cause* of yellow fever, than did Dr. Thomas Tittlebat substantiate his case, when he asserted maggots to be the ordinary cause of death, because he found them so universal in carcasses.

In a series of papers published in this Journal, Dr. Salisbury claims to have discovered the protophytes which produce measles, rheumatism, and syphilis. If he has done this, the question of the nature of disease-poison may be looked upon as settled, and it is therefore very necessary to carefully examine his statements.

Of all these memoirs, the most plausible are those in which the straw fungus is claimed to be the cause of the measles.

Dr. J. Janvier Woodward, U. S. A., in his work on the Camp Diseases of the late war, renders it very probable that there is some fallacy underlying Prof. Salisbury's observations. He states that though it is true that epidemics of measles have commenced in camps, in which the men were lying upon straw; yet the disease has also broken out in barrack buildings, where the men laid on the floor on their blankets without straw, and also in camps where no straw was furnished to the men, who slept upon cedar twigs or India-rubber blankets. Dr. Woodward further says:—

"Camp measles has prevailed almost exclusively in the regiments raised in the rural districts, while those from cities and towns have been more or less completely exempt. In the same manner regiments composed of foreigners have been almost totally exempt. The explanation of these facts is simple. The exempt were those who had had the disease prior to their entry into the service. Those who had hitherto escaped were the sufferers. The inference is inevitable that recruits from the country have generally escaped the disease before their enlistment, while those from towns have usually suffered from it at some previous period. Personal inquiry in regiments, where measles is prevailing speedily shows this inference to be correct. . . . . If, now, Dr. Salisbury's theory is correct, if the straw fungus is the veritable cause of measles, how does it happen that this disease is more common in the towns than in the country? How does it happen that so many thousands of recruits from the remote rural districts have escaped the disorder through youth and adolescence?"

The straw fungus is to be found in all places where there is straw: the stack, stable, barn, and threshing-floors should, therefore, be foci of disease. How then, if Dr. Salisbury's theory be correct, do farmers' children so generally escape the disease? Dr. Woodward also tried inoculating himself and others with the fungus, without, however, producing any effect, except sometimes the formation of a little ulcer at the point of inoculation.

Dr. Wm. Pepper, physician to the Philadelphia Hospital, has instituted a number of experiments with the straw fungus, so elaborate and made under such peculiarly favourable circumstances, that they seem to definitely prove that inoculation with the straw fungus will neither produce measles nor protect the system against the disease. As these experiments have never been published, they are inserted here in full. I also extract from an unpublished inaugural thesis of Dr. Charles E. Smith, of St. Paul, Minnesota, an account of some researches made by him in Camp Cadwalader, near this city.

"At the military camp—Camp Cadwalader, near this city—measles appeared on March 11th, 1864. The weather before and during the whole month was cold and damp, with a great deal of snow and rain. The number of men in camp varied, some arriving, others going 'to the front;' the aggregate, however, was two thousand. The men slept in tents on loose straw. There had been no case of measles in the camp since January 1st, at which time Dr. Michler took charge; I know not whether any occurred prior to that period.

"The men came from different parts of the city and country, and not one of them at the time they were attacked remembered to have been exposed to the disease. On the afternoon of the eleventh one man reported sick with this disease, the rash just making its appearance; the next morning five others were admitted to hospital in the same condition.

"Between this time and April 1st there were twenty cases more. In but one case did the eruption appear before they had slept on straw. The duration of the initiatory symptoms, so far as I could ascertain from their history, varied from two to fourteen days; the rash appearing in some cases the next day after sleeping on straw, in others not until after several days. Two of the patients were old soldiers, and had been exposed to the cause, if it originates in straw, many times without its having affected them, and at the time of their attack were in floored tents with bunks, and no straw whatever. Subsequent inquiries made of these men elicited nothing to account for the appearance of this disorder, except in one case:—

"Edwin Pursur, aged twenty-one, said that while he was in the barracks in the city, before being sent to camp, he had slept next a man 'who was somewhat sick and had a red breaking out over his face and neck.'

"This was the case in which the eruption appeared on the eleventh, before he had slept on straw at all, for in the barracks they sleep on their blankets on the bare boards.

"Some straw was taken from the tents of those attacked with measles, and at the time examined with a pocket lens for fungi, subsequently by the microscope, without finding them either time.

"From this it will appear that the occurrence of measles at Camp Cadwalader, which at first would seem to have been due to fungi from straw, was, in all probability, caused by contagion.

"Now, as all the recruits who were sent to this camp were first received in barracks, and detained there until enough had arrived to form a squad of sufficient size to send out, this one man having been exposed to the disease there, as his statement shows, is it not reasonable to suppose that the other five men in whom the rash appeared the next day after their arrival in camp, having come from the same county in the same squad, sent to the same barracks, and thence to camp together, with the man before mentioned, that they also were exposed to the same cause in the barracks and thus acquired the disease? Surely measles would not be developed even to the appearance of the eruption by sleeping one night on straw.

"The other cases which occurred subsequently, I have no doubt, were the direct results of contagion from the first six.

"Is it not just as probable, that the epidemic of measles which appeared at Camp Sherman (see Dr. Salisbury's paper) was caused in the same way, and the cause had escaped detection?"

Dr. William Pepper's experiments were as follows:—

"The subjects were children in the Blockley Almshouse, where a malignant epidemic of measles was raging at the time.

"Seven were inoculated; in one the initiatory symptoms had developed themselves at the time the operation was performed, which was done in the hope that it might modify the disease. This child subsequently died, the scar on the arm having healed as a simple abrasion would. This one and five others were under three years of age, and in none of the five had any symptoms whatever been developed. The seventh, aged ten, had some irritation around the point of inoculation, followed in a day or two by symptoms of a common cold in the head, which soon passed off. He had not been exposed to any contagion either previously or subsequently.

"Eleven cases were inoculated, in the same institution, on November 24th.

"Five were between the ages of eighteen and twenty-three; six were children between the ages of three and eight months. The points of inoculation in all presented no traces of inflammation, no itching, and the slight abrasion made by the point of the lancet soon disappeared.

"Up to December 14th no trace of anything abnormal was seen.

"The grown persons stated that they never had had measles, so far as they knew. The children never had; they were born in the house, and never had been vaccinated even.

"The points of inoculation were examined with a pocket lens for the radiating red lines described by Dr. S., but without success.

"I made four other experiments also, on the persons of young men from the country, two aged seventeen, the other two eighteen.

"I inoculated them November 20th, and had them to sleep on loose straw. Up to January 10th no sign of anything abnormal was seen. These, also, never had had the disease. All these experiments were performed carefully, and the subjects were examined twice a day up to the times mentioned.

"The fungi were examined under the microscope before any of the operations were performed and found to correspond to the drawings of them given by Dr. S.

"Thus, out of the twenty-two subjects experimented upon, one only had any symptom developed; this was a slight cold in the head; but this might have been an accidental circumstance and not at all owing to the inoculation, as it did not appear in any of the twenty-one other cases.

"It seems that if the fungi have any power in causing this disease, it would have shown itself in those children under one year of age."

In the October number of this Journal, for 1867, appeared Dr. Salisbury's paper on rheumatism; a paper which, if confirmed, must revolutionize our present pathology, and render famous its author. If my memory is not at fault, Prof. Beale somewhere remarks that it is much easier to detect unreliable microscopic work in plates than in text. A careful study of the illustrations of the paper alluded to is then worth the trouble. *Ex uno disce omnes.*

A glance at Figures 1, 2, 3 (p. 376, *Am. Journ. Med. Sc.*, 1867) will show that for the most part they are absolutely identical; Figs. 2 and 3 have each a few crystalloid granules or crystals scattered through the mass, otherwise all three figures offer no differences. Yet Fig. 1 is a "plug of algoid spore (*zymotosis translucens*);" Fig. 2, "granules of cystine;" Fig. 3, "mass of oxalate of lime." Many of the little masses given under Fig. 4 have all the indefinite but at the same time somewhat characteristic appearances of the inorganic particles always present on dirty slides. Most of the figures of fig. 8 would pass in a class room for rude drawings of maize starch grains, which certainly possess the peculiar diagnostic character of stelline, as given by Dr. S., namely, a crack, or peculiar stellate fracture in or near the centre. Further, many of the crystals of Figure 4 are undistinguishable from those given under Figure 8, yet the former are "crystals of cystine," the latter "crystals of stelline."

Such is the *prima facie* evidence derivable from the plate. What are the results obtainable by following the investigations of Prof. S.? Do they coincide with his?

Shortly after my attention was directed to this subject, a highly intel-

ligent medical gentleman, an occasional contributor to this Journal, paid a visit to this city. He had spent some time with the Professor, and been not only greatly impressed by the importance of his discoveries, but also thoroughly initiated into them as well as into his method of working. Acknowledgments are due to him for pointing out in several instances stelline, cystine, and algoid spore masses, at least such he affirmed certain bodies to be, and they all agreed well in appearance with the figures of the various substances as given in the paper of Dr. S. In my mind the conviction fastened itself that they were almost all extraneous matters. It is well to state that the doctor met at various times during his visit most of the best medical microscopists in the city, and, so far as known, did not fail to convince any one, that the stelline and cystine of Dr. Salisbury were extraneous matters.

Having been initiated into Prof. Salisbury's method of procedure, I have examined the blood of a number of persons, both male and female, suffering from rheumatic disorder. All the ordinary types of the disease have been included in these examinations, inflammatory rheumatism, the subacute, muscular variety, and the chronic form, with various intermediate cases, and in all these, without a single exception, the results have been purely negative. In most instances these explorations were made in company with other microscopists, who also failed to find any abnormities. In each case several slides of blood have been most laboriously and thoroughly explored, and in one instance of very marked inflammatory rheumatism, several ounces of blood were drawn from the arm and almost a whole afternoon given to its study. My thanks are due to Dr. Herbert Norris, of the Pennsylvania Hospital, for facilities afforded and assistance in this work. I have also received directly from Prof. Salisbury, through the mail, several mounted slides with blood containing, according to him, stelline, stellurine, &c. &c. Owing to the very defective mounting of most of them the blood was so dried as to render impossible a satisfactory examination. One slide, however, arrived in good condition, and the most careful study of it with as high powers as the very thick glass cover would allow, revealed nothing more than may be seen in any carelessly mounted blood. There was an abundance of foreign matter, such as woollen fibre, particles of dust, &c., but nothing cryptogamic or crystalline. The study of this slide was participated in both by Drs. J. G. Hunt and Wm. Pepper, of this city, two of our best microscopists, the one especially in a botanical, the other in a pathological direction, and they fully agree in the above statement. An examination of the other slides produced the same negative results, except that in one labelled as taken from a man suffering from *amyloid degeneration of the heart!* the whole mass was found to have been changed into magnificent and most distinctive blood crystals. Are some of Prof. S.'s pathological products of this nature? They certainly seem to be formed *outside* of rather than within the body, if it be allowable to judge from

a letter received from him. It is no breach of propriety, I trust, to extract the following passage, as the same idea has been expressed by the Professor in his recent paper in the *N. York Medical Journal*, although not so briefly and positively, and therefore not so suitably for quotation. He says:—

"Many times I explore a single drop of blood for hours before discovering pathological products. When a drop is first placed between the slides the blood-disks frequently so cover up the abnormal bodies that they are not for some little time discoverable."

With this light it is very conceivable at least how an honest observer might think he saw plugs of spores existing in rheumatic blood. If rouleaux of very adhesive corpuscles be watched whilst drying, they will be seen to undergo the following changes: First, the well-known crenations appear, then by and by the individual corpuscles lose their outlines, becoming as it were fused together into one. In this way elongated masses are formed, and the crenations still persisting, under an inferior objective, or under a good objective not carefully adjusted or of too low power, these masses appear granular, each granule being in fact the point of a crenation.

One of the most recent announcements of Dr. Salisbury is that of the discovery of the plants which produce syphilis and gonorrhœa. Of all known diseases, the one, the natural history of which is most irreconcilable with the idea of a fungus as the cause, is syphilis. Why is contact necessary for its passage from one individual to the other if spores or fungi be the cause? Why do not the latter follow the course of all known fungi, and be wafted through the air?

But, suppose Prof. S. to be correct; a man then has connection with a woman infected with the *crypta syphilitica*, and, as a consequence, has a few days following a peculiar ulcer, caused by the plant, which ulcer becomes a new centre of growth for the cryptogam, whence the spores travel to infect the system. Under appropriate treatment the symptoms disappear, and perhaps for years the health seems re-established. But no, the *crypta syphilitica* is lurking somewhere in the blood, the bones, the muscles, or viscera, and favouring circumstances may call it into active, growing life, when all the ravages which have made secondary syphilis a byword of terror and caution are but its footprints. If apparently dormant, still it may be forming its spores, and every spermatozoon which is formed in the man is freighted with its fatal load, to germinate, multiply, and to blast the new life, to which the sperm gives origin. If in round numbers the greatest transverse diameter of a human spermatozoon be $\frac{1}{5000}$ of an inch, what must be the size of the spores of crypta syphilitica to be contained in it? Prof. S. apparently figures them as objects of comparatively large size, but does not give definite information on this point. All of our ordinary fungi perish themselves in the act of producing spores. Not so with this plant, mayhap; for forty years it lives in the testicle, giving off

a constant stream of its spores, living all the time, too, without injuring the tissue in which it is, without interfering with the function of the gland in which it has taken up its abode! The whole asserted life-history of the Crypta syphilitica is so at variance with that of other fungi, as to cast a shadow of doubt upon the observations, even if they had been made in the most skilful manner and by the most experienced observer. In reality, however, the whole memoir bears the impress of a want of care, if not of skill and knowledge.

It is hardly conceivable that any one, with even a very superficial knowledge of the natural history of the protophytes, and of the generic or specific values of characters possessed by them, would give such a generic description as is given of the genus crypta. Not only does it not afford a single family, generic, or specific character, but it is shown to be incorrect by the context itself. For if such a plant does exist, it is a fungus, not "algoid," as the description has it.

Putting all this to one side as not actually disproving Prof. S.'s positive assertions, that the syphilitic poison is a vegetable growth, Dr. William Pepper (Lecturer on Pathology in the University of Pennsylvania) and myself carefully studied a number of chancres at the Philadelphia Hospital, to which he is attending physician. We failed to find any cryptogams therein, but did find various shreds of coagulated mucus and fibrous tissue, as well as granular matters within and without cells, all of which resembled the drawings of the filaments and spores as given by Dr. Salisbury. Since this, Dr. Willard, Resident Physician at the above hospital, has sent me from time to time sloughs obtained by the action of caustics on fresh chancres. These I have very carefully examined with powers ranging from 400 to 800 diameters, and affirm most positively that there were no cryptogams whatever in them, but that they consisted simply of the usual tissue debris.

The experiences of Dr. S. Weir Mitchell, in repeating Prof. S.'s experiments, on rattlesnake venom; of Prof. Leidy, in regard to the spleen; of Drs. Woodward, Pepper, and Smith, in relation to the straw fungus; of various observers, in regard to the cryptogamic origin of syphilis and rheumatism, all so completely coincide as to justify our doubting the correctness of Dr. S.'s observations, until they shall be confirmed by other observers, or demonstrated before some medical society.

It is now almost a generation since the late Prof. Mitchell exhausted speculation in relation to the fungoid origin of general diseases. Before that, and still perhaps more actively since, numerous observers have been searching eagerly, mostly with negative results; but occasionally the discovery has been apparently made. Always, however, the prize has escaped their grasp—further observation has overthrown their conclusions, the *ignis fatuus* of their hopes has vanished in the moment of their seizing it. Some of the most prominent names of botanical and medical science have

been engaged in this pursuit. A notable instance of this is Prof. Langenbeck, who found in the morbid secretion of a glandered horse what he believed to be a peculiar fungus, the cause of the disease. Virchow, however, showed that it was a puccinia, frequently existent in normal human secretions, and by no means always present in cases of glanders. The recent investigations of Prof. Hallier upon the origin of cholera are no exception to the assertion made above. It seems at present very doubtful whether these will be confirmed, and, if they are, they show the Asiatic plague to be a *local*, not a general affection.

That certain vegetable organisms, vibrios and their allies, are found in the blood in some cases of disease, seems, however, to be well established, but that they are present as a consequence, not as a cause of the morbid processes, seems equally certain. The whole natural history of these curious bodies is still involved in doubt. Some of the best recent authorities class them with the algæ, where they evidently do not belong, as they do not possess chlorophyl, and feed solely on organic matter.

Again, Pineau, and more recently Clark, assert that they have seen vibrios being jerked off decaying muscular fibre, which was being directly transformed into them. Accept this, and they must be regarded merely as forms of dead matter, or refuge be taken in the doctrine of spontaneous generation. The view of Frau Lüders, of Kiel, is, however, the most recent, and probably the true one. She states as the results of her observation and experiments, that they are stages of various fungi. It is most probable that the various fermentations are caused by the growth of fungi in the fluid, and that putrefaction is of such nature. Prof. Wyman, of Cambridge, Mass., is very positive as to the agency of these vibrios and their allies in the production of the latter process. In a letter received from him he says:—

"Although my experiments were not made with reference to the subject of putrefaction, yet during the progress of them certain facts were noticed which have a bearing upon your question. The conclusion which is forced upon my mind by them is that organic matter is a *stable* compound, in itself undergoing no change, but only in the presence of some outside force. In sealed flasks its stability is maintained in the presence both of air and water. I have preserved organic solutions in this way for two years, and they would no doubt have been kept indefinitely.

"If, in addition to air and water, living infusoria are present, they change at once and are in part converted into living organisms, and are partly decomposed. So it seems to me that we must give up the old dogma, that the 'vital forces' hold things together, and that they go to pieces as soon as these forces are withdrawn, because the atoms can then satisfy their ordinary affinities. The real source of their destruction is to be found in the reaction of surrounding organisms, and not from that of internal forces.

"In view of all the facts, I see nothing on which putrefaction hinges but the infusoria. It is quite clear that the solutions boiled for several hours are not thereby disqualified from putrefying, for you have only to open the flasks and the process will begin at once."

On the other hand, Donné, as quoted by Bennett, states that "hens' eggs become putrid without the formation of vibrios and other infusoria," and

Prof. Leidy has stated, in conversation, that in his experiments the liquids contained in certain flasks, which were protected from the access of spores, underwent very decided change without the development of living forms.

Whether the views of Prof. Wyman be correct or not, it is certain that under ordinary circumstances vibrios, &c., are always the accompaniments of putrefaction, and may frequently be found in a fluid, before it has undergone more manifest changes. In the *milzbrand* of domestic animals, and its probable derivative in man, malignant pustule, these bodies have frequently been found in the blood, but are said not to be present in all cases, and when present, to be of fatal significance. *A priori* reasoning suggests that their spores are of very necessity at all times present in the blood, and the experiments of Frau Lüders seem to establish this. That lady took a small glass tube with the ends hermetically closed, which had been exposed for half an hour to a temperature of 290° C., and thrust it into the heart of a recently killed guinea-pig, and then broke off the ends. After the blood had been sucked into the tube from the other end, which was melted off, to remove any fluid that might adhere from the lips, the ends of the tube were sealed, and it was kept at the temperature of from 13° to 15° C. After two days fungous granules, chains, and rods were abundant. If then the spores of vibrionidæ be always present in the blood, they must of very necessity develop themselves, whenever that fluid is strongly predisposed to putrefactive changes, as it is in malignant pustule. Their development is a consequence, not a cause of the disease; for if a cause, they would be present in all the cases. So far, then, from these observations lending support to the cryptogamic theory of disease, do they not give great significance to the negative arguments against it? There is no difficulty in finding the fungi in putrefying liquids in or out of the body; why, then, if they be present in the blood of exanthematous patients, can they not be demonstrated? In the vaccine scab there is an exanthematous poison in its most concentrated form. If such poison be fungoid, this virus can certainly be little else than a mass of spores. The scab, however, has been most carefully studied by some of the best microscopists that have ever lived, with powers sufficient to demonstrate the structure of a spore the twenty thousandth of an inch in diameter, without finding any such body. The only possible way of explaining this, and maintaining the integrity of the cryptogamic theory is by *supposing* the existence in the virus of infinitely minute spores, which is making a *supposition* to establish a *supposition*, a fair example of the whole tissue of argument on which the theory rests.

It is proverbially difficult to establish a negation. Still, there may be such an accumulation of negative evidence, as to create a probability so strong as to be worthy to be received as a demonstrated fact, just as circumstantial evidence will frequently convict the criminal. Probabilities thus founded become almost certainties when strongly corroborated by

positive facts. Such facts seem to exist in this case. It is apparently impossible that any of the algæ can cause a general disease from reasons heretofore adduced. Our present knowledge of the natural history of the fungi, especially of their known relations to disease, tends very strongly in the same direction.

It is very certain that numerous *local* affections are produced by the growth of fungi in tissues. These plants are in some cases so placed that they could readily enter the blood and produce systemic diseases if such were their habit. Thus the fungoid growth *Aspergillus pulmonum hominis* has been found by Drs. Von Dusch and Pagen Stecker (*Archiv. Générale de Méd.*, 5e sér. tome xl. p. 738) in the tissue of tubercular lungs, and even in some of the pulmonic capillaries. As another example may be mentioned the curious foot disease of India, in which a mucedinous fungus (Chionyphe carteri) eats its way into the tarsal and metatarsal bones, and even, in time, into the lower ends of the tibia and tarsus. This fungus frequently kills its victim, never, however, by producing a general systemic disorder. The affection preserves throughout its strictly local character, the patient dying eventually of the exhaustion induced by it. If in fungi is to be found the origin of blood diseases, surely in both of these cases everything is most favourable for the production of the symptoms known as those of blood poisoning, and yet in neither are such symptoms manifested.

In what manner do fungi act in producing the various local diseases to which they give rise?

They seem to exert an influence not merely as irritants or passive foreign matters, but by inducing chemical changes mostly in tissues already weakened by disease, changes which are somewhat similar to those of putrefaction and are the result of the life force of the plant seizing on certain elements or compounds for its nutriment. In other words, the fungus feeds on the tissue, and *continues* to grow and feed so long as material is afforded it, unless destroyed by some outside influence, or unless, indeed, the vital powers of the part are so strengthened as to be enabled successfully to resist its encroachments.

The exanthemata are self-limited diseases, *i. e.*, affections which have a fixed, definite course, and which terminate spontaneously if the patient live long enough. The fungal diseases march steadily onwards, have no fixed course, are in no sense self-limited. As proof and example of this take the Indian foot disease already alluded to.

The nearest known approach to the production of systemic disease by fungi is seen in the affections of certain of the lower animals. Their spores have been found in the blood in some of these cases. Do they act in such instances as poisons, producing limited diseases, as typhus, smallpox, etc.? No. On the contrary, they appear to act on the blood as they do upon other tissues, producing a local disease of it, so to speak, giving

origin to a steadily progressive train of symptoms. They feed upon the nutritive fluid, form filaments in it which pierce the walls of the vessels, and ramify through all the tissues.

The most carefully studied of these affections is that which attacks the ordinary house-fly. The first appearance of this disease is the presence of very minute oval cells in the circulating fluid, which cells increase in number, enlarge, grow into filaments, pierce the bloodvessels, and ramify through all the tissues, gradually destroying them. Whilst this is going on, the fly evidently becomes weaker and weaker; by and by the hind legs swell up, stiffen, and all power over them is lost. Then the other limbs undergo similar changes, and finally the little invalid breathes its life out. In eight or ten hours after death, the filaments continuing to grow, pierce through the surface of the body, especially between the wings, and interlace over it to form a whitish winding sheet. By the latter and by their stiffened, projecting legs, flies, dead from this affection, may be readily recognized. Does this course correspond with that of our systemic affections? No! It seems somewhat doubtful, even in these cases, whether the fungus is the original cause of the disease, for, thus far, all attempts at inoculating healthy flies have failed. Fungi are the scavengers of the vegetable world; and it is very possible that the plant merely preys upon an already mortally stricken fly, just as the hyena will feed upon living animals if they are sufficiently prostrated by disease.

The asserted power of the sulphites in arresting zymotic and malarial diseases is relied on by some as affording a substantial argument in favour of the cryptogamic theory. The answer to such reflex arguments is very simple. In the first place, it is by no means proven that the sulphites have the despotic power over these diseases which is claimed for them. Allowing, however, all their most ardent friends claim, there is no proof whatever that their remedial properties are dependent on their poisonous influence upon protophytes or protozoa. The whole set of deductions are purely suppositions and in a circle. Substances possessing such wonderful power over the germinal, living matter of all the lower plants and animals, are to be expected to exert a more or less powerful influence upon the living germinal matter of the higher animals, and at present there is nothing known which disproves the theory that these sulphites act remedially simply by modifying the life actions in some unknown way, or, in other words, by altering nutrition; indeed there is at present no proof of the truth of almost any theory. So far, from our present knowledge of the therapeutics of the sulphites lending aid and comfort to the cryptogamists, it seems to me to afford very conclusive proof that the truth is not with those gentlemen. If a fungus causes a zymosis and the sulphite kills the fungus, the disease must be arrested. The case should invariably follow immediately upon the exhibition of the remedy. The medicine is a specific removing the cause, and, if given sufficiently early, should never fail.

It is, however, notorious that it does often fail; hence the very fair inference that the cause is not removed by it, is not either a protophyte or a protozoon. A sulphite never fails to arrest fermentation outside of the body—why should it fail inside?

Even Prof. Polli himself has abandoned the idea, if he ever really believed it, of the sulphites acting upon the blood as they do upon yeast, purifying it by killing the cryptogams in it.

In conclusion, perhaps it is allowable to state that some two or three years since the writer of this paper was very strongly inclined to believe in the doctrine of animate contagion, having imbibed it during his student life, and that this essay has not been the result solely of studies especially undertaken for the purpose; but that during the prosecution of other microscopic investigations, the evidence so gathered itself in his mind as to lead him into this by-path, and to leave with him no doubt that general diseases are not caused by organic entities. There is a vast accumulation of negative evidence which repudiates the doctrine of animate contagion, either as taught by Linnæus or by more recent authorities. There are no known facts establishing the doctrine; there are many such which strongly support the negative proposition.

JULY 1, 1868.

ART. III.—*Relation of Cancer and Tubercle.* By E. HOLDEN, M. D., Medical Adviser of Mutual Benefit Life Insurance Company, Newark, N. J.

IT is, perhaps, not surprising that a belief should exist in the minds of many professional men, that these two diseases are in some way akin; that, in fact, the one may be but the modification of the other; and that, *cæteris paribus*, the victim of cancer might have been the prey to consumption.

The subject has been recently (as no doubt often before) presented in a plausible manner before the London Medical Society by Weeden Cooke, F. R. C. S., and the alliance and probable identity of the two diseases strongly urged.

Having at hand material never before made available in this country for throwing light on so interesting a subject, in the experience of one of our largest life insurance companies during a period of twenty-three years, I present the following reasons for dissenting from any ideas of identity or similarity between the two affections. It is, indeed, in the matter of life insurance that the question of relationship assumes its chief interest. Cases of cancer and consumption are so frequently found side by side in a family history, that it is a point of no small importance whether they are

or are not to be regarded as evidences of an identical diathesis. Before presenting the facts, however, above alluded to, a few remarks regarding the abstract question of relationship may not be uninteresting, and a plain viewing of the matter from different standpoints assist in arriving at a correct conclusion.

1. Is there anything in the elementary structure of tubercle that shows affiliation with cancer?

2. Is there any similarity in their manner of development? and,

3. Is there any evidence that the tubercular taint can produce cancer, or *vice versâ*?

But for the latter method of putting the question the two former might have been considered answered by the microscope before the valuable investigations of Lebert, or the more recent studies of Beale; yet they are still pertinent, and the microscope fails, alone, to furnish an answer that may be relied upon as final. Yet, what has it shown? In both instances are seen what appear to be cells, both containing nuclei, and what were once believed to be nucleoli; yet here the resemblance ceases, and the microscope of the present day shows these nuclei to be in the one case granules simply. Lebert, in his work on Pathological Physiology, maintained this view, and has been supported by the researches of Virchow. The most complete evidence, however, of the actual difference between them is found in their size; even the nuclei of cancer-globules are much larger than the entire tubercle-globule. (The globule of scirrhus has a diameter of .0175 of a millimetre, their nuclei about .0125, and the whole tubercle globule about .0075, according to the measurements of Lebert.)

Taking the view of other writers, that the tubercle-corpuscle is not a cell, but an exudation, having little tendency to the cell form, the original molecular matter melting into mere nuclei, which are developed no farther (Bennett), and the difference is still more marked.

It would, however, be superfluous to dilate upon microscopical characteristics which are probably familiar; as far, however, as the powers of the present microscope have permitted us to judge, we may infer entire dissimilarity, yet it is impossible to deny that, under some circumstances, appearances may favour a directly opposite conclusion. For example, in cancerous tumours are not unfrequently found globules not to be distinguished, save by the most expert, from tubercle; the advocates of identity in the two diseases maintaining, from this circumstance, a probable origin from the same blastema. When we reflect, however, upon the possible resemblance of the tubercle globule to that of pus also, and that eminent pathologists have even asserted tuberculization to be but a modification of suppuration, we may accept the more readily the statement of Lebert, that these are but cancer-globules, altered by the deposit of granules of fat in their interior, or at any rate admit that they are not tubercle-globules,

simply because they resemble them. Chemically, the difference is one becoming marked only in the process of growth; recent tubercle varying but little from other albuminous compounds.

The discussion of elementary resemblance has, however, with some pathologists, appeared to turn upon the question of inherent vitality or power of growth; and this leads to the second proposition, viz: whether there is any similitude in the manner of development? By this is meant, not simply the growth, maturity, and decay of the individual cell or corpuscle, but the development into the characteristic disease.

In both there is shrinking, alteration of shape, and disintegration into granules, but in "tubercle no tendency has ever been shown by the microscope to organization." In spite of the assertion that vascularity has been detected in it, it possesses no fibrous stroma, as is the case with cancer. Tubercle, moreover, spreads by contiguous deposits; cancer, by inherent power of growth. In the one case we have an unorganized body, a foreign substance; in the other, a vitalized product, with its wonderful multiplication of cells undergoing a rapid transmutation from birth to decay. But, to be more specific, it would be proper to consider the manner of development in a tissue like the lung, not so much in regard to individual and diagnostic signs—which amount to hardly more than difference in appearance of sputa, a greater duration of solidification prior to softening, and the persistence and character of the pain—as in the fact that, as stated by Flint, in cancerous infiltration of one lung, the signs of solidification are confined exclusively to one side, the other affording no evidence of disease. With a similar amount of tubercle in one lung, more or less of the evidence of tubercular deposit in the other would be expected.

In regard to the third proposition, whether any evidence exists that the tubercular taint has ever produced cancer, and *vice versâ*, it is worthy of remark that, as shown by Walshe (*Cyclop. Surg.*, vol. i. p. 623), cancer and tubercle rarely coexist, though they are not antagonistic. We know, moreover, that when cancer has been removed, and subsequent disease attacks the lungs, the disease is rarely tubercle, but cancer. It is, indeed, undisputed that the two are rarely found combined, and isolated cases of such combination can have no more significance than the far more frequent association of certain syphilitic developments with either of them, and perhaps, were it not for the peculiarities attending the origin of the latter disease, a much clearer resemblance in development could be traced between it and cancer than has ever been accomplished between the diseases we are considering.

There is, however, another and most important relation of this question in reference to interchangeable or modifying essential qualities, and that is, its hereditary relation. If it can be shown that the offspring of tuberculous parentage is peculiarly liable to cancer, as we know it is to tubercle, all our microscopical and clinical observation amounts to nothing; the fact of identity of essence becomes established, whatever may be the modification

of such essence undergone in process of transmission. I say peculiarly liable, for even if it were a fact—which it is not, as will be presently shown—that the offspring of tuberculous parentage is *somewhat* more liable to cancer than that of uncontaminated blood, it could prove nothing, for, in accordance with a natural law, an impure fountain cannot give forth pure waters.

In the essay of Mr. W. Cooke, before referred to, this subject of hereditary influence is made the chief basis of the author's argument. He states that of *seventy-nine* cases of scirrhous breast, *thirty-one* could trace a positive hereditary tendency to phthisis. We may well inquire, What is here meant by an hereditary tendency? Is it one, two, or three cases, and are these to be in one's immediate family, or within the circle of near relatives? Is it to be among brothers and sisters, or among parents only? The term is a loose one upon which to base a conclusion, and I am convinced, from extensive investigation into this very subject, that of any *seventy-nine* well persons, taken indiscriminately, this same and even a larger number could be found in whose circle of near relatives one, two, or three cases of consumption had occurred.

The following facts may be found, collectively, to have great weight in assisting to a just conclusion. Certainly, if they show anything, they show most decidedly that cancer and tubercle are in no manner akin, much less identical.

Of *seven thousand and thirty* persons over *forty years of age, one thousand and thirty-two* had consumption in their own immediate families—parents, brothers, or sisters—and *two hundred and forty-seven* of these in two or more members; yet in these one thousand and thirty-two families only *eleven cases* of cancer had ever occurred, while of the whole number (7030) there had been *ninety-nine* cases of cancer in all. Eleven of them, therefore, only were in consumptive families, eighty-eight per cent. arising in families free from tubercular taint.

Persons over forty years of age have been thus taken, since the families of such may be presumed to have had time enough to develop any cancerous taint. In fact, it may be well enough to state that more than one-half of these persons were over *forty-five* years of age.

It will be observed that there is no evading the evident conclusion thus presented, and the only plausible objection to considering it final and overwhelming is one purely hypothetical, and that is, that the transmission of cancer is most frequently other than immediate, making atavism, in truth, a rule rather than, as with tubercle, the exception.

But further, of 55 deaths occurring in 821 families tainted with consumption, but *one* was occasioned by cancer, 33 by consumption. Still further, of one thousand deaths from diseases of the bowels and appendages, there were thirteen from cancer, and in but one of the families of these had consumption occurred, save one having both cancer and consumption.

Further comment would appear to be superfluous.

ART. IV.—*Excessive Hemorrhage following an Incised Wound of the Eyeball.* By W. P. MOON, M.D., Philadelphia, Pa.

THE following case is presented from the very unusual circumstance of a slight wound of the eyeball, giving rise to almost fatal hemorrhage. Having examined a large number of authorities, I have not been able to find a case in which hemorrhage resulted from a similar wound, although, in other respects, the injury is a most common one. The treatment was conducted simply upon general principles. To me the case has been one of considerable interest in all its bearings; and since others, with more experience in the injuries of the eye, regard the case as unusual, I have been led to record its history.

James L., aged 18, while holding a cold chisel of large size, Feb. 1, 1868, at I. P. Morris & Co.'s Foundry, for a fellow workman who was cutting rivets from a steam-boiler, a "flake" of steel from the head of the chisel, or a "chip" from the rivet, three-quarters of an inch long, half an inch wide at one end, and one-eighth of an inch at the other, sharp on one edge, penetrated the lower lid of the right eye, five-eighths of an inch from the inner canthus, making a clean incision through the tarsal border half an inch long; passing through the sclerotic and cornea, it lodged in the upper part of the cornea. The wound was slightly oblique from within outwards, and about three-quarters of an inch in length in the sclerotic and cornea. There was only a trifling amount of bleeding at this time; which ceased entirely when the piece of steel was extracted, which was done by a physician in the neighbourhood. As the eye was not examined very closely, I could not learn whether any vitreous humour had escaped at the time or not. The patient was then sent to Wills Hospital, and on the way hemorrhage suddenly supervened; and he becoming weakened by the loss of blood, was taken to a drug store, and I was called to visit him. During the interval cold applications had been used without any good effect; the blood issuing from between the lids in a stream, coursed down the face. On opening the lids, a clean cut was observed, with a slight hernia of the iris, from the central portion of which the blood flowed in a steady, pulsating stream. The young man was evidently much depressed, the wound having bled upwards of an hour; and it seemed to me to be more immediately necessary to check the hemorrhage rather than to think about the safety of the eye. A solution of the persulphate of iron was applied directly to the wound; the lids closed; a compress of lint, saturated with the iron, applied with gentle pressure. The bleeding still continuing, a larger saturated compress was placed on the lid, and the solution poured upon the blood as it flowed from under the compress. As it ceased issuing at one point, it oozed out at others; and this continued so long that extirpation of the eyeball, or ligation of the carotid, in order to stop the flow, was necessarily thought of. After persevering with the styptic for three-quarters of an hour, I had the satisfaction of seeing the stream measurably diminished, and it ceased altogether after a bandage was applied tolerably tight, the slight dropping being controlled by stuffing cotton and the persulphate of iron under the edges of the bandage. The patient was conveyed home in an ambulance. There was very little bleeding on the

way, and scarcely any after he arrived. Warm bricks were ordered, as he was very much chilled, and half a grain of morphia given; a quarter of a grain more to be given in two hours, if he did not rest well by that time; and absolute quiet was strictly enjoined. The morning following he was comfortable, without pain, very weak, and with a small, quick, irritable pulse. Ordered pil. opii gr. ij, which was to be repeated at night, and a diet of broth or gruel.

Thirty-six hours after the receipt of the injury the patient's general condition was more favourable. When the dressings were removed, the corneal and sclerotic wounds *appeared* to be nearly closed, the former being clear, and without protrusion of the iris; conjunctiva considerably congested; the iris moderately dilated, and apparently *in situ*, with evident inflammatory action settling in. A small quantity of blood was observed in the anterior chamber. On opening the lid the patient said, "I can see"—demonstrating that there was no great accumulation of blood, probably, in the posterior part of the globe. The wound in the tarsal border, which was gaping, was closed with a single suture, atropia applied to the eye, and a compress, moistened with cold water, adjusted; and the opium continued.

As the interest in this case lies entirely in the seriousness and arrest of the hemorrhage, it is not necessary to continue its history and progress. There was considerable inflammation of the sclerotic and conjunctiva, which gradually subsided. Like most similar injuries, traumatic cataract has resulted. There is attachment of the iris to the lens, and to the corneal portion of the wound. A slight choroid protrusion occurred at one time, which has receded, and the wound is entirely healed. The cornea is natural, with some little vision.

Dr. Morton, Surgeon to the Wills Hospital, has reported to me several cases which bear upon the subject of serious hemorrhage from the eye, or following the ordinary operations in ophthalmic surgery; in two instances after the introduction of styles, and once after excision of an eyeball, very alarming hemorrhage followed. In one case severe and continued hemorrhage followed the extirpation of a glaucomatous eyeball, in an elderly lady, which resisted all the usual topical remedies—such as ice, cold cloths, simple astringents, and pressure—and, after continuing for several hours, was only arrested by clearing out the clots, and filling the cavity with powdered Monsel's salt, and superadding a compress. Slight cerebral disturbance followed, but quickly passed away.

In regard to the arrest of hemorrhage from the globe, after wounds, Dr. Morton has suggested the introduction of one or more sutures in the sclerotic, thus effectually occluding the lacerated bleeding vessels. This plan was once adopted by him in a gaping, lacerated wound of the sclerotic, with intra-ocular hemorrhage, the wound uniting by first intention, the suture not giving the least trouble. No great amount of hemorrhage could follow after this simple procedure, for the suture can be drawn quite firmly, without any risk, provided the needle is passed simply through the sclerotic coat.

Lawson mentions two instances in which Mr. Bowman used sutures in

the sclerotic where union was delayed. This I feared would have to be done in my case at one time; but the wound readily healed without it. In the first patient there was a wound in the sclerotic, which had remained patulous for three days; and, in the second, no attempt at union had taken place one week after the accident; yet, in each case, immediate union followed after the edges of the wound had been brought into accurate apposition by a single fine thread suture. In the first case there was oozing of the vitreous, but no hemorrhage in either. Cooper gives one case in which there was serious hemorrhage after excision of the eyeball, and that was in a gentleman of gouty tendency. In another, he speaks of having tied a branch of the ophthalmic artery after excision of the globe. In cases of intra-ocular hemorrhage, he thinks there are two courses open to us—"to extirpate the ball, or adopt palliative measures;" and cites a case related by St. John Edwards, in which a blow upon the eye gave rise to intra-arachnoid hemorrhage which proved fatal. From five to six ounces of blood were found in the left arachnoid cavity, extending downwards to the base of the brain. The smaller wing of the sphenoid bone was found disarticulated and displaced backwards and upwards, exactly in a position to have wounded the middle cerebral artery in the fissure of Sylvius.

Baron Larrey alludes to the striking of bullets upon the margin of the orbit as a cause of intra-ocular hemorrhage and effusion of blood into the chambers of the eye as being common, but only dangerous in respect to the organ itself.

In my own case I am at a loss to account for so serious and continuous hemorrhage. It has been asked, "How much blood was lost?" That, of course, I cannot pretend to tell; but there was an amount sufficient to so reduce a strong, hearty, full-blooded man, that he had to be carried home to his bed, from which he was unable to rise for ten days. The hemorrhage may have come from the anterior ciliary, or a branch of the long ciliary, or from both, as they may have both been divided, I think, from the character and course of the incision.

I found, while attending him, that he was of hemorrhagic tendency; for if a pimple was rubbed, or the skin broken, considerable bleeding followed, and on two occasions he had free hemorrhage from the nose.

As soon as I had examined the eye, and saw the state of the case, the question arose—If I can check the hemorrhage by means of persulphate of iron, will this preparation injure the organ itself? My impression was that it would do harm to the corneal structure, and, if inserted into the globe, must lead to its destruction, so far as vision was concerned. But the preservation of the man's life seemed of far more importance than the loss of the eye. Had not the persulphate of iron arrested the hemorrhage, it was my intention to extirpate the globe. Contrary to my expectations, the iron did not injure the cornea. How much it may be responsible for

subsequent changes in the internal structures of the eye, I am unable to say—but I think there has been no undue inflammatory action; and this, with Dr. Morton's case, in which he used Monsel's salt for hemorrhage after extirpation of the eyeball, go to show, in some measure, that the objection raised by Stellwag is unfounded. In speaking of hemorrhage after excision of the globe, and the use of the tampon as a means of arresting it, he says: "The use of the hot iron as a hemostatic, is, from the proximity of the brain, dangerous—and, moreover, not trustworthy. For the same reason, sesquichloride of iron should not be used, as it chemically changes the blood in the vessels to a great distance, and occasions the formation of plugs, which might readily prove injurious when in the vessels at the base of the brain."

Suppose the tampon will not stop the hemorrhage—for plugging was ineffectual in Dr. Morton's case—we are of necessity driven to try some other means, and I do not know of any more effectual than the persulphate of iron, nor more likely to prove harmless.

March 6. After weeks of suffering, the inflammatory action progressing steadily, but being confined entirely to the structures of the eye, suppuration of the crystalline lens and vitreous humour followed, accompanied with inflammation of the external coats. The left eye beginning to sympathize, I decided to extirpate the injured eye. The patient rapidly recovered, with no untoward symptom.

ART. V.—*Case of Excision of the Entire Scapula, to which is added a History of the Operations involving the Removal of all, or a considerable part of this Bone; with the view of establishing the Surgical Character and Prognosis of this Class of Operations.* By STEPHEN ROGERS, M. D., of New York. (With five wood-cuts.)

CASE.—A girl six years of age, perfectly healthy parents, came under my observation, during the early part of 1867, for an injury of slight character to the elbow of the left side. Before she had recovered the perfect use of the elbow-joint, my attention was called by the mother to a small and almost painless tumour located in the infra-spinous fossa of the left scapula. It was of an oval form, its long diameter corresponding to that of the fossa, was smooth and firm, though somewhat elastic, and the skin overlying it was not in the least discolored, and it appeared to be movable upon the subjacent scapula. It was at that time about the size of a large hen's egg, and had not given any discomfort, the attention of the child having been called to it but a very short time before, by the slightest feeling of uneasiness at the point. As the child's general health was excellent, the history of its ancestry without an exception or even a suspicion, the tumour was at first regarded by me as a deep abscess resulting from some injury, of which there was an imperfect history. After

watching it for a few weeks, I ascertained that it was slowly increasing, that the skin over it was a little reddened, and its temperature increased. Misled by the apparent fluctuation, I at length determined to introduce a very small bistoury to the bone with the hope of liberating any pus that might there be confined. None, however, was found; the puncture contracted a little, but did not close; but, on the contrary, became a fistulous track for the escape of sero-purulent fluid. After this discharge had been thoroughly established, it was on one occasion hastily examined by the microscope, and found to contain many granular nucleolar bodies, which I was disposed to regard—erroneously, as was afterwards shown—as free nuclei of disintegrated cartilage cells. The tumour continued to grow slowly till, at about four months after its discovery, it filled the greater part of the infra-spinous fossa. It had now become a source of much discomfort to the patient, disabling the arm very materially. Upon the supposition that it was an enchondroma, its removal was advised, consented to, and undertaken. The operation revealed the fact that it was a growth from the surface of the scapula, that the infra-spinatus muscle was stretched out over the surface of the tumour, and that when the tumour was removed the bone was considerably roughened and softened at the point of its attachment. All this softened portion having been gouged and scraped away, the wound was closed with but a single ligature—which had been employed to secure the infra-spinous branch of the supra-scapular artery. The tumour was very firm, slightly elastic, and of a milky whiteness, cutting more like cartilage than anything else. The microscope, however, showed no elements of cartilage in its structure. It was composed almost altogether of aggregated free cancer nuclei, held together by a very small amount of stroma. It was now manifest that the nucleolar structure, formerly seen in the discharges from the puncture, was simply some of these free cancer nuclei of which the mass was made up. Some of these had nucleoli, others none. It was, in short, an osteo-cancer of the nucleolar variety, and would be very liable to return in the medullary form. The wound, however, healed promptly, and the patient was discharged, but with the almost certainty that the disease would soon return. After the wound had been cicatrized about two months, a small nodule made its appearance on the surface of the scapula a little above the point of attachment of the first tumour, and grew rather slowly for some two or three months. The character of the disease being now thoroughly understood, the parents were advised to have the entire bone removed as the only means of affording any chance of saving the life of the child for any protracted period. This advice was, however, not followed, but on the contrary, irritating applications were made to it by so-called cancer doctors, which stimulated it into frightful activity, so that from a tumour of the size of a hen's egg, it grew in about two months to the size of half of the child's head, with many points of superficial ulceration. The applications were now discontinued, and the ulcers healed. A temporary arrest of the progress of the growth also marked the suspension of the use of the ointment. After a few weeks, however, it was again seen to be increasing, the general health now began to fail, the tumour was now painful, it had involved the entire scapula, was encroaching upon the humerus and clavicle, and presented a lobulated form with numerous large veins coursing over it, and a very considerable portion of the integument covering it was livid and adherent to the diseased tissues beneath. The tumour extended from well inward near the base of the neck, outwards and downwards to the axilla, and measured over its surface in that direction about ten inches. It extended from well over the head of the humerus in

front, to beyond the posterior border of the scapula, and measured over its surface in this direction about ten inches. There was a small axillary tumour, and a similar glandular enlargement a little beyond the edge of the tumour on the side of the neck.

The parents, frightened at the failing health of the child and her manifest early destruction by the disease, resolved to have an effort made to save her, and again brought her to me. Though an extremely unpromising case as to any permanently good result from the removal of the diseased bone, the sufferings of the little patient, and her rapidly failing health, seemed to call for the operation as a palliative, if no more could be hoped. I did not share the fears expressed by some of the surgeons at the consultation, that the patient would die of shock at, or soon after the operation.

The removal of the diseased bone and other diseased structure was decided upon, and the operation was performed on the 12th of December, 1867, when the patient was seven years and nearly five months old. The plan of the operation was to include all of the diseased integument upon the surface of the tumour within the ellipse formed by an anterior and a posterior curved incision extending from the cervical base of the tumour, downward to the axilla. The integument was then to be reflected from the whole posterior portion of the tumour, and its attachments to the trunk divided, so as to raise it from the walls of the chest and tip it forward, thus exposing the scapulo-humeral articulation posteriorly; loss of blood meanwhile was to be carefully prevented by tying all bleeding vessels at once, whether arteries or veins. No bone was to be touched except that found diseased. In accordance with this plan, the posterior incision was first made, and the integument reflected, and then in their order were next divided the trapezius, rhomboidei and the levator anguli scapulæ muscles. This freed the tumour and diseased scapula from the chest, so that it could be lifted up from the ribs and tilted outward and forward, permitting an inspection of the subscapular portion. In order to fully accomplish this, however, it became necessary to cut away a small portion of the latissimus dorsi, which had become firmly adherent to the tumour at the point this muscle plays over the scapula, also to divide the serratus magnus. This examination showed that the subscapularis muscle was too much involved in the disease to encourage any attempt to save it, so its tendon was divided near the joint, and it was taken with the scapula. As the mass was tipped forward, the coracoid process was seen to be nearly torn away from the body of the bone; an accident resulting from the extreme disease and disintegration of the bone. The division at this stage of the operation, of the coraco-clavicular ligaments, the tendons of the pectoralis minor, of the biceps and of the coraco-brachialis saved this process, and it was removed with the mass. The acromion process, however, was left behind and subsequently dissected away from its attachments to the clavicle. The division of the tendon of the subscapularis having exposed the joint capsule, this was now opened about half way around, fully exposing the joint, and finishing the dissection posteriorly. The mass was now returned to its natural position, and the dissection from in front commenced by an incision in accordance with the plan of the operation above described. In order to avoid all suspected integument, this incision had to be carried in its central portion so far forward as to reach the perpendicular line of the joint, and was an unfavourable circumstance, as will presently be seen. The deep dissection from this anterior incision consisted in, first, the division of the entire scapular portion of the deltoid; second, in the completion of the division of the capsule including the coraco-humeral ligament, the

tendons of the supra- and infra-spinatus and the teres minor muscles; and, third, in the division of the long head of the biceps. The mass now fell away from the body still attached only by the teres major and the long head of the triceps, which were lastly divided. The operation was concluded by the removal of an enlarged axillary gland, and another one of less size from the cervical region. The amount of hemorrhage was unexpectedly small; the subscapular artery, being the principal one requiring ligature, was tied a short distance from its origin. But three or four ligatures were used. This vast opening exposing the ribs, readily closed up, and the line of the united edges of the wound fell about an inch and a quarter posterior to the head of the humerus, which was fixed by appropriate bandaging directly beneath the acromial end of the clavicle. Reaction was completely established in three hours, a remarkably slight consecutive fever followed, a considerabl portion of the extensive wound united by adhesion, the ligatures came away in the usual time, leaving the remainder of the wound to heal by granulation, which it did completely in about forty days. The adhesive process which united the integument to the wound effected a separation of the edges of the flaps at their central portions, leaving a gape at the widest point of about half an inch, through which the posterior portion of the head of the humerus could be seen, and the progress of formation of new attachments and surroundings could be daily observed. The usual process of roughening and ulceration of its synovial and cartilaginous surface could be seen, and the final appearance of red granulations over the whole ulcerated surface, which formed a part of the granular bed of the closing cicatrix. Owing to the accidental displacement of a broad bandage which had been passed down over the clavicle and under the elbow, for the purpose of maintaining the head of the humerus in close proximity to the outer end of the clavicle, undue pressure had been made upon the skin covering the extremity of that bone,

Fig. 1.

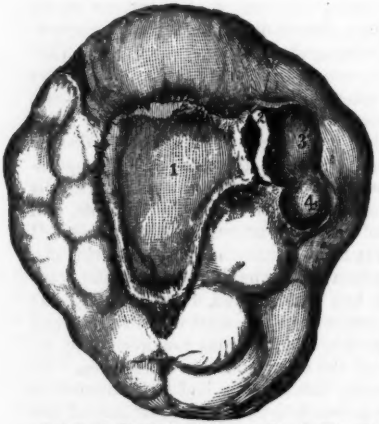


Fig. 2.

FIG. 1.—1. The body of the scapula. 2. The articular cartilage separated from the bone by disease. 3 and 4. Facets upon the surface of the tumour, made by the head and neck of the humerus.

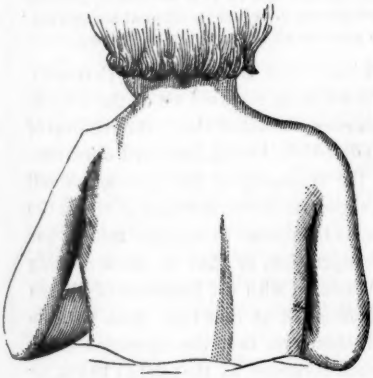
during the first twenty-four hours after the operation, causing it to slough. Nothing serious resulted from it, however, and it cicatrized before the

principal wound. The disease was osteo-cancer of the medullary variety, involving the entire scapula, even the processes, and the tumour, six hours after its removal, weighed a little more than three pounds, the weight of the entire body of the child at the time of the operation being thirty-six pounds. After freezing the tumour, it was divided by the saw through the perpendicular plane of the inclosed scapula, and that section exhibits the relations of the bone to the tumour, as well as their relative sizes, perfectly, and it is very well represented by Fig. 1, which is one-fourth the size of the tumour. The wound had completely cicatrized by about the fortieth day, the health of the patient was excellent to all appearances, she had become fat and had grown in stature; and at forty-five days after the operation, the general and local appearances were as the accompanying plates represent: Figs. 2, 3, 4, 5. Any written description of her condition as

Fig. 3.

Fig. 4.

Fig. 5.



respects utility of the preserved arm seems to me superfluous, with these figures, taken from photographs, before us. They exhibit various extremes

of voluntary movement of the arm possessed by this patient at about forty-five days after the removal of the scapula. She could, besides these movements, elevate the arm from the side, between twenty and thirty degrees. Subsequently, all the voluntary movements acquired still greater range. So useful had the extremity become at about the fortieth day, that had it been the right side, it would hardly have been impaired for writing or easy sewing. When dressed, the resulting deformity was scarcely noticeable. In respect to the utility of the extremity, and the deformity, this case has resulted as successfully as there was any anatomical possibility of its doing, and more so than there was much reason to expect it would.

The patient died, however, six months after the operation, of a return of the disease, which took place in the following order: *a.* Enlargement of the cervical glands near the upper point of the cicatrix. *b.* Cancerous disease of the bones of the spine at and about the lowest point of origin of the trapezius muscle, viz., the lower dorsal and upper lumbar vertebræ, which produced paralysis of the lower extremity. *c.* Development of intra-thoracic cancer, of which she finally died. *d.* Cancerous growths of considerable size in the tissues surrounding the seat of the excised tumour.

The removal of the entire scapula with the attempt to retain the upper extremity is, so far as I can obtain information upon the subject, a modern advance in surgery. The earliest published proposition to adopt this operative expedient for the retention of the extremity without the scapula, which I have met with, is that of Liston, in 1819. Mr. Fergusson, in his *Lectures on the Progress of Surgery*, speaks of this proposition of Liston in the following language:—

"In a month, the patient, from whom Mr. Liston removed about three-fourths of the scapula, went home with the wound nearly healed. A few weeks afterwards it assumed an unhealthy aspect, and gradually a dark purple excrescence grew from it, accompanied by occasional alarming hemorrhage. Liston proposed to remove the *remaining* portion of *the scapula* and half of the clavicle. He represented the ease with which the subclavian could be tied by turning forward the scapula from the ribs. He could get no one, however, to second his opinion, and he was very unwillingly obliged to give up all thoughts of operating."

The next nearest approach to this idea I find in a memoir of Petrequin, of Lyons, who, in reporting a case in which he removed all of the scapula except the glenoid cavity and the processes, remarked that "the removal of the scapula *at the neck* is not only admissible, but an indicated operation, the object being the preservation of the symmetry of the shoulder as well as the use of the arm." His total silence as to the removal of the entire bone, with the same objects, indicates, as it appears to me, that this author did not recognize it as a justifiable operation, or that he knew nothing about it. As Petrequin was well acquainted with the literature of French surgery, he may fairly be taken to represent it at that time, upon the subject of removal of the scapula, and, therefore, that the operation under discussion was unknown among French surgeons at that date (1859), or at least unrecognized.

Among the Germans, however, we find Reid, of Jena, urging the prac-

ticability and propriety of the operation of removing the entire scapula, with the preservation of the arm, in certain cases, as early as 1847, though no case presented itself to him on which he could demonstrate his doctrines. Fergusson awards the credit of first practising the operation to Syme, of Edinburgh. (*Lectures on the Progress of Surgery.*) "Removal of the scapula, with at the same time preservation of the arm," he remarks, "is entirely a modern achievement in surgery, and for which we are indebted to Syme, of Edinburgh." This statement is manifestly erroneous, for there can be no question that Langenbeck, of Berlin, removed the entire scapula, preserving the arm, in 1855. The question of priority, therefore, is settled in favour of the latter. The history of the operation, from its first performance by this surgeon down to the present date, is quickly told. We are, apparently, safe in regarding it, as Mr. Fergusson does, a modern operation.

Our standard works on surgery are very meagre of information upon the subject; some of them, indeed, being entirely silent. As to the French writers, Petrequin remarks upon the almost total neglect of the whole subject by them, and enumerates some of the most voluminous of their works as utterly silent upon the operation under discussion. Among the writers in our own language, of whom we might expect an extended account, may be mentioned Mr. Holmes, who has devoted but a short paragraph to the subject of removal of the scapula, in his article on excisions. Prof. Gross has given the subject more attention, and has enriched it with a case of his own. It is remarkable that Liston, after his experience with disease of the scapula, should have omitted to even mention the subject in his *Surgery;* and still more remarkable that, during the course of his lectures, in after life, upon the diseases of the bones, he should have said, "Little need be said about the scapula, as it is seldom diseased." He does not even allude to his own case of malignant disease of this bone, which has been so generally quoted by later writers. Mr. South, in his edition of Chelius, has done the subject very fair justice up to the date of his publication. It was, however, reserved for the energetic Syme to really contribute to the subject in a durable form. The late edition of his surgical work contains the clear record of his three cases. Should Sir William Fergusson prepare a new edition of his *Surgery*, his recent experience would no doubt enable him to add very much to the section upon the scapula. If we may judge from his language, he may be regarded as almost enthusiastic in support of the operations which, while they remove the scapula, preserve the arm. In the course of his lectures already quoted he took occasion to say:—

"Six years have now elapsed since Mr. Jones, of Jersey, removed the whole of the scapula, preserving the limb, and the patient lives in excellent health, with a useful arm, and I here present a photograph recently taken, showing her figure." (For figure, see *Lancet*, June 18, 1864, Fig. 10. Also the recent volume of *Lectures on the Progress of Surgery*, London, 1867.)

On the same occasion, after relating the early history of Syme's second case, he went on to remark that—

"In November, 1862, the scapula, with a portion of the clavicle, was removed by that enterprising surgeon; and in January, 1864, Mr. Syme reported that this patient remains in perfect health, with a wonderfully useful arm. Here is his figure [see *Lancet*, June 18, 1864, Fig. 11, and the vol. already referred to], in which he is represented in the act of holding up a heavy chair with the preserved limb, to show the vigour still retained. Looking to the fact that this man had already lost the head of the humerus, the case seems to me the *ne plus ultra* of conservative surgery."

"Contrast these cases," exclaims Mr. Fergusson, "with a sketch of my own case [see vol. already referred to] of removal of the scapula after the arm had been amputated at the shoulder-joint by some rash hand before. The loss of the arm seems deplorable, and, looking at it as having occurred some fifteen years prior to the operations of Syme and Jones, the contrast speaks volumes in favour of that progress for which I now plead, and I know of no bolder conservative feats in surgery than those of the two gentlemen just mentioned."

Such are the sentiments of Mr. Fergusson upon the subject of removing the scapula and saving the arm, and certainly no surgeon has had better opportunities for maturing his judgment. I will therefore repeat my belief that, should he publish a new edition of his *Surgery*, he will systematize his knowledge and experience into an ample chapter upon exsections of the scapula. The literature upon the subject at the present time is disseminated over a vast field of periodical publications, and but two attempts have been made to gather it up into a form to make it useful for the guidance of the surgeon, so far as I have been able to ascertain. One of these was made by Petrequin in 1859, in his paper before alluded to, and the other by Günther, in his surgical summary in 1860. Of the former paper I can only say that it is a most imperfect and superficial production, adding no material information to the subject, and entirely omitting much that is valuable. Günther's article, however, is much more complete, omitting, indeed, very little material which existed at the date of its publication. These two papers, one in French and the other in German, comprise all that I have been able to find upon the subject of operations upon the scapula, apart from the isolated reports of individual cases. But since these reports, a very considerable amount of material has been added to the subject, by published and unpublished experience of surgeons in various parts of the world; and to add this in a concise form to that which had been published, as well as supply omissions of former publications and arrange the mass of material so as to be available for scientific reference for readers of the English language, I have prepared the following tabular statement. It embodies the history of operations involving the loss of more or less of the scapula in their chronological order, and is as nearly complete as my time and that of several of my professional friends would enable us to make it.

Tabular Statement of the Operations involving the Removal of all or the greater part of the Scapula.

Tabular Statement of the Operations involving the Removal of all or the greater part of the Scapula.

No.	Operator.	Date.	Operation.	Disease.	Result.	Remarks.
1	Mr. Cummings	1808	Amputation of arm including the scapula	Gunshot comminution of these bones	Recovery	This accident occurred to an adult male.
2	Van Walther	1811	Attempt to remove the greater part of the scapula	"Spongy swelling upon the bone"	Died fourteen days after the operation of suppuration and exhaustion	This patient was a man 30 years of age. The operation was abandoned at an advanced stage, on account of the patient's having fainted, and it was regarded as too formidable to again undertake.
3	Mr. Liston	1819	Removal of about three-quarters of the scapula, measuring from behind forwards. The patient was a boy of 16 years.	Osteo-cancer of a remarkably vascular form	Died soon after of a return of the disease	The hemorrhage during this operation is described as having been frightful, it chiefly taking place at the time the body of the scapula was divided to separate the diseased from the sound bone.
4	Heymann, of Coblentz	1823	Removal of all the bone, except the neck, supra-spinous fossa, and the acromion process.	Osteo-cancer in a young man of 22 years	Recovery with good use of the arm, but he died a year after the operation of return of the disease	
5	Janson, of Lyons	1824	Removal of all the bone, except its processes and the neck and glenoid cavity.	Osteo-cancer of the bone in a female of 45 years	She was discharged two months after the operation with a useful arm on this same side	This growth is said to have been from the infra-spinous fossa, and to have projected forwards into the axilla so much as to prevent the arm from falling nearer to the side than 45°.
6	Wutzer, of Münster	1825	Removal of all of the bone except its processes and glenoid cavity. Patient a man of 44 years.	Osteo-cancer of the medullary variety	Recovery with good use of the arm, but the disease returned at length, and the patient died of it four years after the operation	
7	Castara, of Luneville, France	1826	Attempted removal of the greater part of the bone.	"Tumour of the scapula"	Patient died of air in the veins during the operation	This accident is reported to have occurred during the division of the bone between the sound and diseased tissue.
8	Mr. Luke	1828	Removal of three-quarters of the bone measuring from behind forwards	"Supposed malignant disease of the bone," the patient being a girl of 14 years	Recovered with a most useful arm	This operation is described as having been a very bloody one, and that more than twenty arteries were tied during it.
9	Mr. Skey	1830	Removed all of the bone except the glenoid cavity	"Fibrous tumour" of large size, patient being a man of 40 years	Recovery with a useful arm	
10	Gætani Bey	1830	Removed the scapula and upper extremity	Gunshot wound comminuting these bones	Recovery though the patient was a boy of only 14 years	
11	Jäger	1833	Removed the entire bone except the glenoid cavity and acromion	Caries; the patient being a female of only 8 years	Caries extended to the neighbouring bones, and the patient died 9 months after the operation	This case is reported to have been complicated with tuberculosis, and was probably a tubercular disease of the bones. So far as the arm was concerned, this case was successful, a very useful arm being preserved.
12	Dr. Crosby, of Hanover, U. S.	1835	Removal of the scapula secondary to amputation of the arm	Malignant disease in an adult	Recovery, but died a few months later of a return of the disease	As this case was never reported in the journals, I am indebted to the present Dr. Crosby, of Hanover, for the imperfect account I give of this case.

Tabular Statement of the Operations involving the Removal of all or the greater part of the Scapula—continued.

No.	Operator.	Date.	Operation.	Disease.	Result.	Remarks.
13	Syme, of Edinburgh	1836	Removed the neck and glenoid cavity and processes and the head of the humerus	Enchondroma in an adult male	No subsequent history	
14	Mussey	1837	Removed the scapula and clavicle six years after amputation at the shoulder, and 19 years after amputation at the metacarpus.	Osteo-sarcoma, the patient being, at the date of the last operation, 40 years old	Recovery, and at last accounts, 30 years after the last operation, the patient was healthy and active	The malignant character of this disease is sufficiently demonstrated by the fact that it returned twice after operations for its removal. It is therefore a case well calculated to encourage the surgeon to operate for the removal of cancerous bones.
15	Larrey	1838	Removed the scapula and arm.	Gunshot comminution of these bones in a boy of 14 years.	Recovery	It is reported also that this subject received so severe an injury of the scrotum at the same time that castration was necessary, and was performed at the same time.
16	McClellan, of Philadelphia	1838	Removed the scapula, arm, and most of the clavicle at one operation.	Encephaloma in a boy of 17 years	Recovered from the operation and did well for a time, but finally died of return of the disease six months after the operation	McClellan claimed that so far as he knew this was the first case in which the arm, scapula, and clavicle had been removed by the surgeon for disease at a single operation. I think he was correct. Gaetani Bey's and Larrey's cases were nearest like it.
17	Mr. Travers	1838	Removed all the scapula below the spine	"Medullary sarcoma;" the patient was an adult male	The patient died one year after the operation of a return of the disease	There is no record pertaining to the state of the arm after the operation in this case. The hemorrhage attending the operation is recorded as very severe.
18	Rigaud, of Strasbourg	1842	Removed the scapula and outer end of clavicle 8 months after amputation at the shoulder	Osteo-sarcoma; patient was a man 51 years old	Recovered, and was enjoying good health three years after the last operation	This case affords as much encouragement to the surgeon as Mussey's case.
19	Dr. Cooper, of British Guiana	1842	Removed one-third of the scapula and outer third of the clavicle.	Machine injury	Recovered	This case is reported more in detail among the cases of tearing away from the body, of the arm and scapula.
20	Petrequin, of Lyons	1844	Removed all the scapula except the glenoid cavity and processes	Osteo-sarcoma; the patient being a boy of 20	Died twenty-five days after the operation	
21	Mussey	1845	Removed the scapula, arm, and outer half of clavicle at one operation	Osteo-cancer; age of patient not given	Recovered and was in good health nine years after the operation	It will be remarked that this operation was almost exactly similar to McClellan's, though its results were vastly better.
22	Dr. Lewis, of Boston	1845	Removal of the scapula and clavicle and a fragment of the arm	Machine injury comminuting these bones	Died soon after the operation	This patient is reported as having died in consequence more of other severe injuries than those involving the arm and scapula.
23	Dr. Gilbert, of Philadelphia	1846	Removal of neck and glenoid cavity and processes and arm at one operation	Osteo-cancer; the patient was a medical man	Died five months after the operation of return of the disease	It is reported that at a later period this surgeon performed a second almost exactly similar operation, but I have failed to find any record of it.

No	Operator.	Date.	Operation.	Disease.	Result.	Remarks.
24	Textor, Jr.	1846	Removed all of the infra-spinous fossa except a narrow border on its posterior edge	Enchondroma; the patient was a child of two years and two months old	Was discharged well in forty days with good use of the arm	This is the youngest subject on whom this operation is recorded to have been performed.
25	Mr. Fergusson	1847	Removed the scapula and outer end of the clavicle three years after amputation at the shoulder-joint	Caries; the patient was an adult male	Recovery perfect and permanent	
26	Langenbeck	1848	Removed all the scapula except the glenoid cavity and coronoid process	Fracture comminuted of the bone; patient was an adult male	Died of pyæmia on the twenty-first day after the operation	
27	Textor, Jr., of Heidelberg	1849	Removed the greater part of the infra-spinous fossa of the scapula	Osteo-cancer of large size; the patient was a man of 56 years	Recovered with good use of the arm, but the disease returned and destroyed the patient	It is reported that seven distinct operations were performed at various intervals upon this patient for the removal of re-appearing cancerous growths.
28	Langenbeck	1850	Removed the scapula except the coronoid process	Enchondroma softened; the patient was a man of 30 y'rs	Died seventeen hours after the operation.	It stands recorded that, in the opinion of the medical men present at this operation, the chloroform had the greater part in the production of the fatal results.
29	Dr. S. D. Gross	1850	Removed all of the scapula except the head and acromion process	Osteo-cancer; the patient was an adult male	Recovered. No record of the condition of the arm	Dr. Gross reports that this patient died of pleuro-pneumonia three months after the operation, and does not think that the fatal disease had any connection with the former disease of the scapula.
30	Hertz, of Erlangen	1852	Removed all the bone except the glenoid cavity and coronoid process	Medullary cancer; the patient was a female of 20 years	Died of loss of blood an hour after the operation	
31	Barrier, of Lyons	1853	Removed the infra-spinous portion of the scapula	Enchondroma of large size; patient an adult	Died within 24 hours after the operation	
32	Englehardt, of Riga	1853	Removed all the scapula except the glenoid cavity and processes	Necrosis; the patient was a man of 27 years	Recovered, and at four and a half months after was healthy	
33	Langenbeck	1855	Removed the entire scapula and three inches of the clavicle	Osteo-cancer of the encephaloid variety; patient a boy of 12 years	Died of a return of the disease ten months after operation	At the operation 2½ inches of the clavicle were removed, but on account of necrosis at the point of division, half an inch more was subsequently removed. No account is given of the degree of usefulness of the arm after the operation.
34	Syme	1856	Removed the entire scapula	"Sanguineous cyst of the bone," by others regarded as a vascular encephaloma; patient a female of 70 years	Wound healed promptly, and the patient had the best prospects of retaining a useful arm, when she died of old age about two months after the operation	During the progress of the cicatrization the head of the humerus was exposed for some time. This is the first recorded case of removal of the entire scapula in Great Britain.
35	Heyfelder	1857	Removed the scapula and head of the humerus	Caries in an adult	Died on the eighth day after the operation of pyæmia	

Tabular Statement of the Operations involving the Removal of all or the greater part of the Scapula—continued.

No.	Operator.	Date.	Operation.	Disease.	Result.	Remarks.
36	Dr. Carnochan, of New York	1857	Removed nearly three-quarters of the scapula, the division being in an oblique direction from below upwards across the spine	Caries; the patient was an adult male	Recovery with good use of the arm	
37	Mr. Jones, of Jersey	1858	Removed the entire scapula and about an inch of the outer extremity of the clavicle	Caries; the patient was a girl of 15 years	Recovered promptly and permanently. Six years after the operation was in good health, with a most useful arm	This was the first, and, so far as I know, the last case of removal of the entire scapula for caries, preserving the arm, that has been performed in Great Britain.
38	Niepie	1860	Removed the arm, scapula, and clavicle	Machine injury	Recovery	
39	Dr. Hammer, of St. Louis	1860	Removed all of the scapula and three-fourths of an inch of the outer end of the clavicle	Osteo-cancer; the patient was a girl of 18 years	Recovered with a useful arm, but finally died of return of the disease ten months after the operation	Dr. Hammer performed a preliminary operation several days before this operation, at which he discovered that the tumour upon the scapula was an outgrowth from the bone. A piece of the mass was removed for microscopic examination, and having been found cancerous, the whole bone was removed a few days after.
40	Mr. Syme	1860	Removed the entire scapula and outer end of clavicle about two inches, the head of the humerus having been removed some time before	Osteo-cancer; the patient was a man of 43 years	Recovered, and had a useful arm, and was enjoying good health some years after the operation	This is the case alluded to by Mr. Fergusson as the *ne plus ultra* of conservative surgery.
41	Schuh, of Vienna	1860	Removed the entire scapula from a child of eight years	Osteo-cancer	Recovered from the operation, but there is no subsequent history	
42	Dr. Walter, of Pittsburg, Pa.	1860	Removed by enucleation all of the scapula except the neck, glenoid cavity, and acromion	Necrosis; the patient was a boy of 17 years at the time of the operation	Recovered, and six months after the operation had a perfect use of the arm, and the bone was nearly perfectly reproduced	Velpeau alludes to a case recorded by Rislau and another by Chopart, in both of which a reproduction of bone took place after a sequestrum in the scapula had been removed. Dr. Walter states that his patient had a nearly perfect scapula reproduced by the periosteum left behind.
43	Neudörfer	1862	Removed the greater part of the scapula	Necrosis, following a gunshot comminution of the bone in an adult	Recovered with a useful arm	
44	Mr. Paget	1862	Removed all the infra-spinous portion of the bone except the inferior angle, and also part of the spine	Osteo-cancer in a boy whose age is not given	No subsequent history of the case is found recorded	
45	Weinker, of Giessen	1863	Removed all of the scapula except the glenoid cavity and acromion	Encephaloma; the patient was a young man of 17½ years	Died of exhaustion within twenty-four hours after the operation	This case was the theme of an inaugural dissertation at Felsing in 1863.
46	Mr. Syme	1863	Removed the scapula and outer half of the clavicle with the arm	Osteo-cancer; the patient was a man of 40 years	Recovered, and was in good health some years after the operation	

No.	Operator.	Date.	Operation.	Disease.	Result.	Remarks.
47	Michaux, of France	1864	Removed the entire scapula and no more	Encephaloma	Recovered with a useful arm, but the disease returned, and the patient died ten months after the operation	
48	Buck, of New York	1864	Removed the scapula and part of the clavicle	Osteo-cancer; the patient was an adult male	Recovered, but a few months after died of a return of the disease	This patient had previously lost the arm by amputation for the same disease, and in respect to the number of operations for diseased growth it resembled case No. 27 of this table.
49	Fergusson	1865	Removed all of the scapula except the acromion process	Encephaloma; the patient was a man of 25 years	Recovered from the operation, and at the end of the first month had considerable antero-posterior movement of the arm. There is no record of the case after that date	Fergusson claimed this to have been the third case of removal of the entire scapula in Great Britain and London. He opened the joint first in front. This experience led him to say that, were he to perform the operation again, he would isolate the posterior portion of the scapula first, opening the joint from behind first, leaving the anterior portion of the incision and disarticulation to the last. He also advocated the leaving of the acromion when it is not diseased as tending to reduce the deformity.
50	Fergusson	1865	Removed all of the scapula below the spine	Fibro-recurrent tumour involving all of the infra-spinous fossa; the patient was a girl of 19 years	Recovered from the operation promptly with good use of the arm	This patient finally became the subject of the operation described as the 52d one of this table.
51	Mr. Pollock	1865	Removed the entire scapula except the acromion	Osteo-cancer of large size; the patient was a girl of 16 years	Recovered from the operation, and had a useful arm eleven weeks after the operation, date of last report of her	This was precisely the operation of Fergusson, with his suggestion of isolating the tumour from behind first carried into practice by Mr. Pollock.
52	Fergusson	1866	Removed all the scapula left by the operation No. 50, the clavicle and the arm	Fibro-recurrent tumour; the patient was 20 years of age at the time of this operation	Recovered from the operation, but there is no subsequent history	
53	Fergusson	1867	Removed the scapula, part of the clavicle, and the arm at one operation	Osteo-cancer; this patient was a man of 40 years	Died of shock three days after the operation	This operation was like McClellan's, as to extent, but its unfortunate termination was probably induced by the condition of low vitality of the patient indicated by the fatty degeneration of the heart, kidneys, & liver.
54	Busch	No date	Removed scapula and part of clavicle after amputation of the arm	Osteo-cancer; patient a female, but the age not given	Recovered from the operation, and two years after she earned her living by work in a factory	
55	Busch	No date	Removed the entire scapula except the glenoid cavity	Cause not stated	Died of exhausting suppuration	
56	Stephen Rogers, of New York	1867	Removed the entire scapula and no more	Osteo-cancer of the encephaloid variety in a girl of 7 years	Recovered from the operation, but died of return of the disease six months after the operation	This patient had good use of the arm till its movements were impeded by new cancerous growths about the shoulder. Patient died of apnœa from the pressure of mediastinal cancer.

This statement affords all the evidence necessary, it appears to me, to convince the most sceptical surgeon that no part of the scapula is absolutely necessary to the possession of a very useful arm. Of the fifty-six cases given in this table, in twenty-five, or nearly fifty per cent., at least three-fourths of the scapula was removed. Of these twenty-five, sixteen are reported as having been followed by a good use of the corresponding arm, about sixty-five per cent. The fact, in truth, being that all the patients who survived the operations, and did not suffer an early return of the disease, retained a good use of the arm. We do not learn from the exhibit of this table that the removal of the entire scapula is a more serious operation than the removal of the greater part of it, for it appears that of the forty-five cases in which more or less of the scapula was removed, ten died of causes more or less directly connected with the operation. One, for example, died of loss of blood; one of air in the veins during the operation; four of exhausting suppuration; three from the shock of the operation and exhaustion; and one from pyæmia. This makes a total of one in four and a half. Now, if we look at the cases in which the entire scapula was removed, preserving the arm, and in a few of them the clavicle was involved also, we see that death as a result, even remotely, of the operation did not occur in any of them. This result is very markedly in support of Mr. Jones' opinion that the removal of a large part of the scapula for disease is a more dangerous operation than the removal of the whole bone. It is suggested by this author, I believe, that the subject of Mr. Liston's case of removal of three-fourths of the scapula, with nearly fatal hemorrhage, would have lost much less blood had the operation for the removal of the whole bone been properly practised.

While, unfortunately, no new light upon the pathology or the prognosis of operations performed for cancerous disease is afforded by this table, it stimulates the brightest hopes for the operation of removing the scapula, preserving the arm, where the destroying disease is caries or necrosis. We are not, however, without hope even in unquestionably cancerous affections of this bone, while we have such cases as Syme's second and Mussey's first before us. It will be remembered that in the former the head of the humerus was first removed for osteo-cancer; and recurring in the scapula and clavicle, the former bone was entirely removed, together with the outer end of the latter. This is the case which Mr. Fergusson quotes in high terms of eulogy. This patient was enjoying a useful life years after the last operation. The malignant character of the disease in Mussey's case was sufficiently shown by its having returned after two operations, which had removed the arm. The third operation carried away the scapula and clavicle; and thirty years after this last operation, the patient, who had then become an old man, still led an active and useful life—a living example of the triumph of persistive surgery over malignant disease. A cancerous

disease of the scapula does not, therefore, present any hopeless obstacle to the operation of removing the bone. The operation performed in the case which served as an introduction to this paper was then justified, so far as the question of the malignant element of the disease is concerned. That it was of the most malignant nature, the microscopic examination of the primitive tumour, and the rapid growth of the recurrent one, left no shadow of doubt. Its removal was, therefore, undertaken with the almost certainty that it would again recur, but still with the hope that it might not.

The operation being then most probably only palliative, the query very naturally arises, were the risks attending it counterbalanced by such prospective temporary benefit? In reply, we have the facts—first, that, on account of the pain and the oppressive weight of the tumour, the health of the little patient was so rapidly failing that even the parents regarded some operative procedure necessary to prolong life; second, that as no other organ, and only one or two glands were at all complicated in the disease, it appeared at least possible, if not probable, that the removal of the entire diseased mass would afford a relief from the disease for a time, if not permanently. This hope, it must not be forgotten, was much strengthened by the histories of Mussey's and Syme's cases.

Now, as regards the immediate danger of the operation, so much feared by surgeons, this does not appear to me to be great. In the first place, there is no anatomical reason why it should be so. I am convinced that Velpeau overestimated these anatomical difficulties. He says, in speaking of the scapula, "But it is so surrounded by thick muscles, that at first sight it would appear difficult to effect its resection." The fact, however, is that this bone is not surrounded by muscles remarkable for their being thick; on the contrary, they are thin. It seems hardly necessary to remark that the trapezius, the chief muscle attaching the scapula to the skeleton, is a broad but thin muscle. It is next followed by the rhomboidei and the levator muscles, and all together form a broad but thin band of muscular tissue. This, together with the scapular portions of the deltoid, and the tendon of the serratus magnus, compose all the muscular structure of any consequence which is divided in the operation for removal of the scapula. All else is areolar tissue, integument, vessels, nerves, and tendons. Among the last may be mentioned the tendons of the pectoralis minor, of the biceps, of the omo-hyoid, of the scapular, and of the teres muscles. These altogether are tissues of very moderate extent. No very important vessels are involved, and the hemorrhage is easily controlled. Probably more than half of all the tissues to be divided in this operation are met with in the scapular portion of the deltoid. It is, therefore, quite clear that there is no other bone of the human frame, of the size or weight of the scapula, whose removal involves less injury to muscles, nerves, and vessels, and certainly the loss of no one as large is followed by less disability. Death from shock, therefore, is very unlikely to occur, and from hemorrhage is

easily avoided. Indeed, we have already seen that, practically, no death from shock or hemorrhage has yet occurred in a case where the entire scapula has been removed. It will be recollected that death resulted in about one in four and a half of the cases in which the greater part of the scapula was removed, showing that the removal of the entire scapula is a less dangerous operation than the removal of a part of it, inasmuch as in the nine cases of the former operation no death has taken place.

In estimating the probable constitutional depression which the removal of the scapula is likely to produce, surgeons appear to have been uninfluenced by the histories of many recorded cases of the accidents by which the arm, including the scapula, has been torn from the body by machinery. As a matter of curious and instructive history, I have prepared the subjoined statement of all the accidents of this character, the record of which I have been able to find:—

The first recorded case of tearing of the arm and scapula from the body is that of Cheselden. It took place in 1737. There was no bleeding of importance, no ligatures were used, and the patient made a prompt recovery. Belchier is reported by some authors to have seen a similar case about the same time, but it is much more probable that his report referred to Cheselden's case. (*Philosophical Transactions*, vol. xl. p. 313.)

The second, or at least the next, case is one reported by Clough in 1779, of a girl of 11 years, whose arm and scapula were torn away. She was discharged well in two months. (*Ibid.*)

The third case was recorded by the late Dr. Mussey. It occurred in 1819. The subject was a boy of 16 years of age. It having been declared by the witnesses of the accident that the whole machinery of the mill was for a moment stopped by the body of the boy coming between the belt-wheel and the beam above, and that the next moment the arm gave way and the machinery went on, Dr. Mussey instituted experiments to ascertain how much power, as represented by lifting weights, was necessary to stop the machinery, and ascertained that about 840 pounds would stop it. He therefore concluded that it took a force of about 840 pounds to sever the scapula and arm from the body. The amount of blood lost was estimated by Dr. M. at less than a pint; no ligature was employed, and the patient was well in eight weeks. (*Am. Journ. of the Med. Sci.*, 1837, vol. xxi. p. 387.)

The fourth case, quoted by South in his edition of Chelius, occurred about 1830, in a boy of ten or eleven years of age. It is reported by Mr. James. No hemorrhage of consequence took place, no ligatures were applied, and the boy was well in nine weeks.

The fifth case is recorded by Scarnell as having occurred in 1832. It occurred in a boy of 13 years of age. This surgeon thought it necessary, in dressing the wound, to remove the outer third of the clavicle. He also, as a matter of precaution, secured the vessels by ligature, though little bleeding had occurred. He states that the general health of the boy was little affected by the accident, and he was running about in a fortnight. (*Lancet*, 1832, vol. xxii.)

The sixth case is reported by John Braithwaite in the *London Medical Gazette* for 1833. It occurred to a boy of 12 years. There was little bleeding until the surgeon disturbed the pulsating artery with the forceps,

when a violent gush of blood took place. It was at once secured by ligature. Very little shock was experienced, and recovery was early effected.

The seventh case, recorded by Lizars, included the outer half of the clavicle, which was torn away with the scapula and arm. There was little bleeding, but, as a precautionary measure, the subclavian artery was ligated. Recovery was prompt. (*South's Chelius.*)

The eighth case is reported in the *New York Medical Journal*, vol. i. p. 284, by Dr. Cooper. It occurred in a boy of 7 years of age, whose arm and two-thirds of the scapula were torn away by machinery. The outer third of the clavicle being exposed, was removed, and the remaining third of the scapula was dissected out. There was little bleeding and little shock. Recovered rapidly.

The ninth case was reported by Dr. King, of Glasgow, in 1845, in the *London and Edinburgh Journal.* It was a case whose main points were almost exactly like those of Lizars' above quoted. Recovery was rapid.

The tenth case is recorded by Cartwright, and quoted by Fergusson and others, but whose date I have not been able to find. It consisted in the tearing off of the arm and scapula. There were no untoward symptoms, and recovery was prompt.

The eleventh case is recorded by Dr. Lowe, of England, in the *Lancet* of November, 1867. It occurred in 1866, in a boy of 18 years, and was a loss of the arm and scapula. Very little hemorrhage, though at the dressing the subclavian artery was tied, as a matter of additional safety. The boy was well in a month.

Besides these cases, Mr. Fergusson makes the statement that Dorsey, Carmichael, and others have recorded similar cases. But I do not find any such record in Dorsey's *Surgery.* He there simply quotes Cheselden's case, to illustrate the effect of lacerating and stretching the arteries in preventing hemorrhage. Had he seen such a case at the time of writing, it seems most likely that he would have mentioned it in the same connection. Carmichael's case was one in which the arm was torn off a little above the elbow, and not above the shoulder-joint. In consequence of the injury to the tissues of the arm, however, it was thought best to amputate at the shoulder-joint. The patient recovered promptly, though only three and a half years old. (*Medical Facts*, 1791, vol. ii. p. 18.)

It will be observed that these cases have been uniformly attended by little loss of blood, and by remarkably little shock. No ligatures were employed in most of them, because there was no hemorrhage requiring them, and recovery has been uniform.

Impressed with the remarkably favourable terminations of his and of so many other similar cases, Dr. King observes that "these cases appear to justify a very favourable prognosis; but it must be recollected that while fortunate cases are sure to find their way into circulation, those of an opposite character are equally certain to be allowed to fall quietly into oblivion." He fails, however, to produce a case in support of this reflection upon the profession, and I have not been able to obtain the history of a single one. He also attempts to show, by citing two cases of tearing off of the lower extremity, which were followed by remarkably little shock

that this fact is not peculiar to the upper extremity, and that we must account for it in the sudden and violent manner of its performance. He infers, therefore, that if the amputations of the surgeon could in some manner imitate the machine process, the results would be better. I do not regard the cases he cites as at all comparable to the accidental tearing away of the arm and scapula.

One, for example, was that of a boy of 12 years, described by Mr. Carter, whose leg and thigh and part of the scrotum were torn away. Mr. Carter says: "When I attended, which was immediately after the accident, I found him on the floor, covered with a blanket, and, seemingly, free from pain, or any anxiety further than what appeared to proceed from the trouble his parents were in in consequence of the accident." (*Medical Facts*, 1791, vol. ii. p. 18.)

The description of the above case shows that it was not a tearing away of the thigh from the pelvis, but a separation of the thigh in the upper third, of which the patient died on the fifth day. The other case cited by Dr. King was that of a boy of nine years, whose leg was torn from the thigh at the knee-joint, and who was soon after found by the surgeon, suffering but little discomfort, but very much afraid that his parents would scold him. What finally became of this boy, I have not been able to ascertain. They are, therefore, not cases to be compared with the evulsion of the arm and scapula. They can only be compared with Mr. Carmichael's case, in which the arm of a little girl of three and a half years was torn off above the elbow, and the soft tissues of the arm so much injured as to require amputation at the shoulder-joint, which was done immediately, and the little patient was discharged cured in about two months. Indeed, I know of no records which will enable us to compare evulsion of the thigh with that of the arm and scapula. As to Dr. King's idea that machinery amputation is less fatal than when performed by the surgeon, our statistical table shows that the surgical amputations above the shoulder-joint have been remarkable for their low mortality; and could we obtain the cases which Dr. K. thinks may have sunk into oblivion, we might perhaps find that surgical amputations of this character have quite as low a mortality as those performed by machinery.

These cases do in fact teach us a practical and very instructive lesson. We learn from them that so severe a mutilation as tearing away the arm and scapula from the body is not attended by any dangerous degree of shock; and further, that when exsection is added to this accident, as in Cooper's case, or amputation at the shoulder-joint, as in Carmichael's case, the shock is not dangerously augmented. Indeed, we are apparently authorized by this exhibit, in connection with the table accompanying this report, in concluding that amputations above the shoulder, whether by machinery or by the knife, are little, if at all more dangerous than amputations at the joint. Now, if the removal of the arm and scapula from

the body is attended by so little shock, is it not fair to infer that the removal of the scapula alone, which requires far less mutilation, would be attended by still less shock? Practically, this inference has been supported by experience, as this table shows. Early death appearing inevitable, as it did in the case I have related, the operation of removal of the entire diseased bone was therefore not opposed by any grave immediate risks of life. This being true, it was justifiable, as we have before seen, even in the face of very decided chances that the disease would return. The following remarks of Mr. Paget, made upon the occasion of removal of part of the scapula for cancerous disease, are very applicable to the above conclusion:—

"In many cases we must operate almost against hope, with a very little probability of recovery. When uncertain as to the character of the disease, the grounds for operation are all the stronger."

These are his sentiments with reference to unquestionably cancerous disease of the bone, which he remarks are sure to return, though there is generally a period of immunity from it. He illustrates the propriety of operating in malignant disease of the bones by the relation of two cases, in one of which death at last terminated prolonged and extreme suffering from a tumour in the upper portion of the thigh. It had been let alone upon the diagnosis that it was cancerous, and after death it was found to be cartilaginous. The other was a cystic disease of the femur, similarly diagnosed. He thought the lives of both patients might have been saved by removing the limbs affected. These remarks, however, do not apply fully to the case I have recorded, for the character of the disease could not be doubted, the primary growth having been examined. Almost exactly the same circumstance existed in Dr. Hammer's case, the only difference being that the interval between the primary and final operation being but a few days in Dr. Hammer's case, instead of a few months, as in mine. An undoubtedly better proceeding in both cases would have been to extract some fragment of the tumours for microscopic examination by an appropriate instrument, before proceeding to any formal surgical operation. This, however, could be of little service except as a means of making up a prognosis, unless applied to directing the manner and extent of the operation, which is to follow. I regard it as a very grave mistake that the entire scapula was not removed, in the case I have reported, at the first operation. Had the microscopic character of the tumour been correctly ascertained, no operation but the extirpation of the entire bone would have been practised; and there can be no doubt that had it been removed at that early date, the chances of more permanent relief would have been increased.

This remark introduces the subject of the propriety or safety of removing a part only of a bone affected with cancerous disease. Mr. Paget, after a most matured experience in the matter, asks if, "in cancer of the

bone, it be sufficient to remove the part affected, or should we take away the whole bone?" To this query he replied that "if the removal of the whole bone does not increase the risks to life, do it; but, if otherwise, remove only the part affected." We have already seen that, according to the records of operations upon the scapula, the removal of any considerable portion of it is a more dangerous operation than the extirpation of the entire bone. The scapula in this case, therefore, should have been extirpated at the time of the removal of the first tumour. It will probably be noted that no allusion has been made to the subject of the comparative usefulness of the arm in case of the removal of all or the greater part of the scapula. The details of the records upon this point are too meagre to afford the means of a very definite conclusion. Mr. Luke's case, operated upon in 1828, is the most satisfactory one as to the results after removing the greater portion of the bone. Three-fourths, it is said, was the amount removed, measuring from behind forward. This patient is reported to have afterwards become the mother of a numerous family, and to have been able to use the arm nearly as well as the one of the sound side, though the disease was supposed to be malignant. Unquestionably the most favourable report of any case in which the entire bone was taken away, was that of Mr. Jones. We have a report as late as six years after the operation, when she had a most useful arm, and a very moderate degree of deformity. So far, then, as experience goes, we have no reason to think that the utility of the arm is much, if any increased, by leaving a piece of the scapula, including the glenoid cavity. Anatomically, I cannot see why we should expect that the glenoid cavity, deprived of all, or nearly all of its muscular and tendinous supports, could be of much value in securing the usefulness of the supports to the head of the humerus. I regard it as a piece of mutilated bone, more likely to give trouble than to be of any future service. Again, Mr. Fergusson advocates the plan of leaving the acromion process, when it can be done, on the ground that it helps to maintain the utility of the deltoid, and to preserve the contour of the shoulder. The latter result must, of course, depend upon the presence of the head of the humerus beneath it. It may be a fair question, however, with the surgeon, whether any such advantages as Fergusson claims for the preservation of the acromion, is not more than outweighed by the risk attending it of leaving contaminated bone. Influenced by the knowledge upon the subject which my investigations have furnished me, I would decidedly prefer the removal of the whole bone, rather than a part of it, in cases of malignant disease, particularly if a very considerable portion of it were involved in the growth. The grounds for this preference are—

First. That the results are quite as good as to the future usefulness of the arm.

Second. That the dangers attending the operation are scarcely ever greater, generally less; and,

Third. The liability of the disease to return is probably less. In cases of necrosis and caries, however, these principles are not applicable, as the history of Dr. Walter's and other similar cases show. In these cases the plan very clearly is to remove little if any more than the diseased tissue, and to avoid the carrying away of periosteum as carefully as possible, for as in Walter's and other similar cases alluded to in the table, a more or less great part of the bone may be reproduced. It will add to the interest of this point to quote Dr. Mussey's statement regarding the reproduction of bone in his case of tearing away of the arm and scapula before related. He says—

"A year after the injury I saw the patient, and found a bony plate, apparently about three-fourths of an inch wide, taking such a course as to represent the marginal parts of the entire body of the scapula, firmly adherent to the muscular parts beneath the skin. This triangular bony frame could be moved upward and downward, backward and forward, by a voluntary motion of the muscles attached to it." (*American Journal of Med. Sciences*, 1837–8, p. 386.)

In conclusion, it may be summarily stated that the exsection of the entire scapula, with preservation of the arm, is an operation of very modern date, first performed, so far as the records have informed us, in 1855.

The following abstract from our main table will exhibit an outline of the nine, and only cases, known to the history of surgery:—

Langenbeck, in 1855, removed the entire scapula and three inches of the clavicle.

Syme, in 1856, removed the entire scapula and no more.

Heyfelder, in 1857, removed the scapula; at the same operation the head of the humerus was also removed.

Jones, in 1858, removed the entire scapula and about an inch from the outer end of the clavicle.

Hammer, in 1860, removed the entire scapula and about three-fourths of an inch from the clavicle at its acromial end.

Syme, in 1860, removed the entire scapula and outer end of the clavicle, the head of the humerus having been removed at a previous operation.

Schuh, in 1860, removed the entire scapula and no more.

Michaux, in 1864, removed the whole scapula and no more.

Rogers, in 1867, removed the whole scapula and no more.

The legitimate surgical character of the operation is no longer a subject of doubt, and we are not now liable to the criticism which was so severely bestowed upon Mr. Syme in 1856, for having practised an operation which, at best, must leave a worse than useless arm, as was alleged. On the contrary, it is practised and defended and urged with enthusiasm by the highest surgical authority as the *ne plus ultra* of conservative surgery.

There is no anatomical or pathological reason why the scapula should not be removed for any disease of the bone, which sound surgery would make it expedient to remove any other bone in the frame for, and in malignant disease of this bone, it is safer and better surgery, as it is in similar disease in all bones, to remove the whole rather than a part. The prog-

nosis of this, or any operation upon the scapula, as to the life of the patient is quite as good as in all similar operations upon the principal bones of the body, and much better than in some. The laws of pathology governing cancerous disease of the bones are just as true in the case of the scapula as elsewhere; and so of caries and necrosis. The prognosis as to the value of the arm in case of removal of all, or a part of the scapula, may be almost positively, and to a high degree, favourable. In fact, if the operation saves the life for any considerable time, as well as the limb, the latter is nearly certain to be useful. In many of the cases recorded it has been so to a remarkable extent.

For facilities in obtaining the material for this paper, I am under especial obligations to Drs. S. S. Purple, E. Krackowizer, A. Jacobi, Stephen Smith, M. Blumenthal, of this city, and Dr. Marsh, U. S. A., and for very valuable assistance to Dr. J. G. Frazer, of this city.

NEW YORK, Aug. 4, 1868. 249 W. 42d St.

ART. VI.—*Remarks on Traumatic Hemorrhage, with Cases.* By PHILIP HARVEY, M. D., late Surgeon U. S. V., Burlington, Iowa.

THE means of arresting traumatic hemorrhage have the strongest claims for investigation. How far compression and styptics may be relied on, when to have recourse to operative interference, and what operation to perform, are continually recurring questions. When the bleeding cannot be controlled by other means, the rule of securing the wounded artery by ligatures above and below the wound in it, is doubtless the safest one; and, when the wound is recent, should be adopted, when we have the option, even if the hemorrhage for the time being is restrained. But it is sometimes impossible to reach the vessel at the wounded point, and we must of necessity depend on other resources. When many days have elapsed from the receipt of the wound, the flow of blood ceased, and we have in fact an increasing traumatic aneurism to treat, not external hemorrhage, I think the Hunterian plan of procedure, of tying the artery at the place of election above the wound, will usually be found the most eligible; for besides being efficacious, it can be had recourse to with comparative facility in most cases, and occasions less injury and disturbance to the parts implicated. If the means used by nature for arresting the flow of blood are for the time effectual, though there may have been recurring hemorrhage, or though the consequent diffused aneurism may be increasing and threatening a speedy rupture, still, as these natural barriers are able to stand against the direct current, they will, *à fortiori*, be able to control

the more feeble reflux from the lower orifice, if that should remain open; though after some days have passed from the receipt of the injury there is a probability that the lower orifice may have become cemented, a probability that increases with the lapse of time. In cases of this kind I am inclined to think it safe and proper to rely on cutting off the flow through the main channel above, without disturbing the wounded parts, or interfering with the cyst, if such should be deemed the easiest mode of procedure.

In some cases of alarming secondary hemorrhage from gunshot wounds, where the bleeding orifice could not be reached, and where it was impossible to determine the source, especially when it came from beneath the scapula, I have found satisfactory results from the use of lint dipped in the solution of persulphate of iron carried well down to the bleeding vessel by means of forceps, and left there till loosened by suppuration; but I would not recommend a reliance on styptics in cases of serious hemorrhage, when the bleeding vessel can be reached and tied.

I am induced to make these remarks, and to send you the two following cases that occurred under my observation in South Kansas, in 1864, when I was acting as medical director of that military district, by reading some cases of traumatic aneurism in a late number of this Journal.

CASE 1. B. C., aged sixteen years, was accidentally shot in the left groin by a revolver, on the 22d of August, 1864. The ball entered immediately on the outside of the femoral artery, and ranging downwards and outwards came out behind the external vastus at the lower third of the thigh. The hemorrhage was copious, and he fell in a state of syncope before he could proceed many yards towards the house. He was found lying in a state of collapse about half an hour afterwards, and carried home, where by the use of stimulants he revived. During the subsequent night he again sunk into a state of protracted syncope; when I was sent for. I found him pale, pulseless, and unconscious, with the upper part of the thigh distended by extravasation, though there was no external bleeding. I applied compression on the artery at the groin, and made use of stimulants. By morning reaction had again taken place. As the tumefaction was extending above the groin, the pad there was removed on the supposition that it was doing more harm than good by pressing on the vein. For two or three days he appeared to be doing well, when a pulsating tumour was observed below the groin, in the track of the femoral vessels, attended with a very decided bellows sound. This continued to increase for several days, and the limb became painful from distension. An oozing of dissolved blood from the upper wound now hinted that much further delay might not be safe, and I counselled an operation; not knowing, however, whether it would be best to search for the wound in the artery or tie above, I intended the operation to be exploratory at first, and afterwards to act as circumstances should indicate. It was not till the first of September that the friends would consent to the operation; it then was evident to all that something must be done. Having administered chloroform, I divided the integuments and fascia lata from the edge of the sartorious to the bend of the groin, over the usual course of the femoral artery, its pulsation being undistinguishable from that of the tumour. The incision proved to be half an inch on the

outside of the artery, which was beating very feebly. There were some tenacious coagula among the muscles, and those forming the sac appeared also tough. The femoral artery was separated from its attachments beneath by the tumour, and pressing it between the thumb and finger, a little below the groin, did not stop the pulsation in the cyst; I therefore explored further up and found the profunda given off immediately below the crural arch; it merged directly into the pulsating tumour, so that I did not think it safe to trust a ligature so close to the bifurcation, and therefore passed the thread around the common trunk. The sac extended deep down beneath the rectus, out of sight and reach, and it appeared an alarming undertaking to lay it open in search of the wounded vessel. This might have been the profunda, or it might have been the external circumflex close to the profunda. Pulsation ceased on tightening the thread, and the wound was closed. The profunda evinced stronger pulsation than the femoral, the latter being compressed by the tumour and pulsating feebly. For many days after the operation the weather was sultry, and the limb sustained but little diminution of temperature. He lost no blood during the operation, and improved rapidly after it. On the ninth day the ligature came away, and on the fifteenth a large slough composed of the debris of the aneurismal cyst was drawn out by the forceps. After this the wound closed up rapidly. The last I saw of the case, about a month after the operation, the only thing the matter with the limb was a slight difficulty in straightening it from contraction of the cicatrix at the groin—the spot at which the ball entered. He was nevertheless able to walk about, and I doubt not entirely recovered the use of the limb in a short time.

CASE 2. Private D. D., Company "C," Third Wisconsin Vol. Cav., was wounded in the right forearm, by a pistol shot, at Hickman's Mills, Mo., on the 17th of October, 1864. The ball entered on the dorsal aspect of the limb, about midway between the wrist and elbow, and passing between the radius and ulna emerged at the upper part of the forearm, on its palmar aspect, near the outer condyle of the humerus. There was considerable arterial bleeding at the time, and as there was no pulsation of the radial below the wound, I supposed it to be divided somewhere near the bend of the arm. The hemorrhage was controlled by pressure; and as we were under marching orders, the man was sent to the general hospital at Kansas City, distant about twelve miles. I saw him there a week afterwards, after the battle of Westport, when I went to Kansas City to make arrangements for the reception of our wounded. The forearm was then greatly swollen and painful, the tumefaction pulsating strongly from the bend of the elbow half way down the forearm. Though he was under the care of the surgeon in charge of the hospital, Act. Asst. Surg. Geo. H. Hood, U. S. A., I saw the man daily for a week. On the night of the 28th of the month hemorrhage recurred with considerable violence, spouting from the upper orifice; this was restrained by a pad and bandage over the brachial. He could not, however, bear sufficient pressure to command all pulsation in the limb. Under these circumstances I recommended putting a ligature round the brachial at the middle of the arm, and at the request of Dr. Hood, performed the operation on the morning of the 29th. With the assistance of the doctor this was accomplished without difficulty or accident. On tightening the ligature all pulsation in the tumour ceased, and soon after all pain subsided. The night after the operation he said was the first tranquil one he had passed since the accident. The next day

I followed the army southward, as there had been more fighting, and I received a telegraphic despatch that my services were needed. I saw no more of the case; but on the 23d of November I received a letter from Dr. Hood, dated Kansas City, Mo., Nov. 21, 1864, from which I make the following extract in reference to it:—

"I have deferred writing in reply to your favour of the 9th until now, that I might report progress in that interesting case of private D. The object sought for in his case has been attained. He did very well until the 9th or 10th of this month, when erysipelatous inflammation of the forearm supervened and gave a new interest and rather unpromising aspect to the case for a few days. He is now improving again, and I think in a fair way to make a good recovery. The ligature came away on the 12th. He is very grateful to you for the professional aid given him, and wishes me to give you this expression of it. Should anything occur different from what is now anticipated in the case, I will advise you of it." * * * * *

I subsequently learned that the case progressed favourably to complete recovery of health and limb.

ART. VII.—*Account of a New and very Successful Operation for the Worst Forms of Cleft of the Hard Palate.* Illustrated by 17 figures and a brief analysis of 55 cases. By WM. R. WHITEHEAD, M. D., of New York.

THE term muco-periosteal uranoplasty is applied by German surgeons to a very successful operation for cleft of the hard palate. This operation is comparatively of recent origin, and well deserves the attention which it has received in Continental Europe. The interesting experimental essays of Flourens and others on animals for the reproduction of bone from the periosteum by the transplantation of this membrane, foreshadowed a series of brilliant successes in conservative surgery, suggesting many valuable and practical applications; but none bolder and stamped more plainly with the impress of originality than this method of Langenbeck for the closure of fissures of the bony palate. The feasibility of this operative procedure, is equalled only by the practical conception of utilizing the periosteum for the production of an osseous palatine vault in those unfortunate defects of the palate which heretofore have entirely baffled the most dextrous surgical skill. The opinion of Simon, of Rostock, concerning this subject, is especially important, not only as expressing his personal experience with the operation, but also as exhibiting the favourable results which have succeeded its repetition by other surgeons. He remarks:—

"Since the publication of Langenbeck's method of muco-periosteal uranoplasty the number of successful results in this department of surgery can almost be numbered by hundreds, whereas before success was rather exceptional than otherwise. He further states that this method will certainly bear comparison with any other mode of operating, and thus far has not been materially improved

upon." (*Mittheilungen aus der chirurgischen Klinik des Rostocker Krankenhauses während der jahre* 1861–1865, von Prof. Dr. Gustav Simon. Prague, 1868.)

Some surgeons oppose all attempts at operative interference in cases of cleft of the hard palate, and even staphylorraphy, on the ground that this operation fails to improve the speech. The evidence to the contrary is attested by too many successful results to permit assent to such opposition, which must necessarily have considerably less weight when not based on a knowledge of the recent progress made in this field of plastic surgery.

In this country Langenbeck's operation is almost unknown. My own experience with it thus far has been quite limited, but very instructive. Through the assistance of Drs. Elsberg and Van Gieson, who have kindly aided me with the German text, I have learned all the most important facts relating to the subject, and have collected a large number of cases which it is hoped will give additional importance to this communication. I am particularly indebted also to Dr. Krackowizer for loaning me the principal German periodical in which this subject has been appreciatively considered. It is generally conceded that the first attempt at staphylorraphy was made in 1816 by Graefe, of Berlin; but Bérard (*Dict. de Méd.*, en trente volumes. art. Staphylorraphy) attributes to a French dentist the merit of operating for fissured palate at a period anterior to that date. In France, in 1819, Roux (Sédillot, *Traité de Méd. Opératoire*, tome second, 2ème edition, p. 52) successfully accomplished the operation on a young physician, Dr. Stephenson, who read the report of his own case before the French Academy of Medicine, eliciting an enthusiasm which presaged the most pleasing success for staphylorraphy. The names of Dieffenbach, Mettauer, Mütter, J. Mason Warren, Pancoast, Fergusson, Sédillot, and many others have since become intimately associated with staphylorraphy, which has usually been restricted to a small proportion of cases of congenital defect of the palate, eight or nine-tenths of such defects being accompanied with cleft of the hard palate, the closure of which has many times ineffectually exercised the ingenuity and patient skill of surgeons in this and in other countries.

One of the most notable exceptions to this, however, is the successful case of J. Mason Warren.[1] The occasional and partially successful closure of cleft of the hard palate heretofore, has only served to mark the uncertainty of such attempts which most generally have not been based upon a correct view of the principal points to be observed in preserving the vitality of the detached parts. When this precaution has been properly taken, a partial success has sometimes followed the detachment and union of the opposite mucous surfaces of the cleft, especially facilitated by a right formation of the flaps. This has been in a few instances the case with Pollock,[2]

[1] Am. Journ. of the Med. Sciences, July, 1843, p. 257.
[2] Medico-Chirurg. Trans., vol. xxxix. p. 71.

and later, with Baizeau[1] in his restoration of acquired defects of the palatine vault. But to Langenbeck[2] alone is due an eminently successful procedure which preserves the nutrient vessels uninjured and includes the periosteum in the flaps with a view to the ultimate reproduction of bone to close the fissured vault.

The controverted subject of the reproduction of bone has but quite recently received increased attention by the publication of the exhaustive treatises of Sédillot[3] and Ollier,[4] in both of which works is discussed the subject of the reproduction of bone after muco-periosteal uranoplasty.

To facilitate the description of Langenbeck's method, it is very necessary to recollect the peculiar distribution of the arteries which supply the roof of the mouth. There are three vascular points to be carefully respected in making the incisions and detaching the soft parts.

These points correspond to the angles of a triangular space occupied by the horizontal processes of the superior maxillæ and palate bones, the apex of the triangle being at the foramen incisivum and the other angles corresponding to the inferior openings of the posterior palatine canals. It should be recollected that the spheno-palatine and superior or descending palatine arteries are the terminal branches of the internal maxillary artery: The superior palatine in passing down the posterior palatine canal, before emerging, gives off branches which descend in the small accessory palatine canals to supply the soft palate and anastomose with the ascending palatine, a branch of the facial. The descending palatine then runs forward in a groove on the inner side of the alveolar border of the hard palate, and is distributed to the mucous membrane and periosteum of the hard palate and gums, but continues forward to the anterior palatine canal, through which this artery passes upward to anastomose with the one on the opposite side, and with the artery of the septum nasi, a branch of the naso-palatine. The superior palatine artery in its horizontal portion, which extends from the posterior to the anterior palatine canal, is far from being of inconsiderable size, and if cut, may give rise to troublesome and dangerous hemorrhage, and will occasion gangrene of the detached parts.

One of the little terminal branches of the ascending or inferior palatine artery, after passing between the levator and tensor palatores muscles, curves backward and downward, and is in relation with the inner border and posterior surface of the levator palati, and the knife, in dividing this muscle in staphylorraphy, cuts this artery occasionally, causing some

[1] Mémoire sur les perforations et les divisions de la Voute Palatine, Arch. Gén. de Méd., Decembre, 1861.

[2] Arch. für Klin. Chirurg. II. Band Erstes und Zweites Heft, Berlin, 1861; also Arch. Gén. de Méd., 5ème série, tome 19, pages 271–567 and 709.

[3] De l'Évidement Sous-Périoste des Os, p. 52. Paris, 1867.

[4] Traité Expérimental et Clinique de la Régénération des Os, et de la Production artificielle du Tissu Osseux, vol. ii. p. 474.

hemorrhage, but which is generally checked without much delay by gargling with ice water.

Usually in previous attempts at closure of fissures of the hard palate, the flaps which were detached with much care and difficulty were deficient in nutrient vessels, and gangrene necessarily resulted, causing in some few cases such destruction that doubtless the patient's deformity has been increased instead of lessened. The livid appearance of the part which succeeds when the superior palatine is cut is immediate, and the vascular reticulum within the substance of the flap being separated from its connection with the subjacent bones, the quantity of nutrient blood circulating in the detached part is altogether insufficient, and failure of the operation will nearly always ensue. But sometimes, however, when the detachment has not been too extensive, and the proximal part of the flap is well nourished, its distal portion may receive sufficient blood to maintain its vitality.

Langenbeck has been enabled by his operation so thoroughly to separate and approximate the soft parts, at the same time preserving the nutrient vessels intact, that the two operations, uranoplasty and staphylorraphy, or closure of the cleft in the hard and soft palate, have been repeatedly accomplished in one operation by different surgeons.

Different Forms of Congential Cleft Palate.—The diversities of form observed in congential deficiencies of the palate are so numerous that no two cases are entirely alike. Langenbeck divides congential defects of the palate into those which are complete and those which are partial. He remarks:—

"Complete cleft of the palate embraces those varieties which are designated *medium*, *bilateral*, and *unilateral*. The medium cleft is the most infrequent variety: In this form the upper lip and soft palate are split in the mesial line; the intermaxillary bones, vomer, and nasal septum are entirely absent, and the palate processes rudimentary. The *bilateral form* of cleft is nearly always complicated with double hare-lip and a medium cleft of the velum palati. The palate processes of the superior maxillæ are imperfectly developed, and exist only as two very narrow longitudinal ridges; the vomer is seen in the middle. Sometimes there is incomplete development of the left intermaxillary bone with smaller incisors than on the right side. Occasionally there is an excessive development of the vomer at its anterior part, causing the intermaxillary bones to protrude in a very prominent manner, which adds to the unsightly deformity. Sometimes, especially in new-born children, there is a fissure between the intermaxillary bones. The unilateral form of cleft is not infrequent, and is nearly always accompanied with a median cleft of the velum palati, and with simple or double hare-lip. The cleft of the palate is nearly always on the left side of the vomer; the upper lip of that side is entirely split, and when the hare-lip is double, the cleft of the lip on the right side is less than that on the left. Most frequently in this form of split palate the left ala of the nose is buried in the cheek. There is complete development of the left maxilla. The palatine process of the right side, instead of being horizontal, rises nearly perpendicularly in following the direction of the alveolar border, and is continuous with the nasal septum formed principally by the vomer. The left palatine process is represented by a narrow horizontal ridge. Langenbeck states that it has been erroneously supposed that the excision of the intermaxillary bones, in cases of bilateral cleft, does not really produce an important loss of substance,

while facilitating very much the operation for hare-lip, but subsequently, however, there is a defective development of the upper jaw in its antero-posterior direction, and the approximation of the cleft anteriorly is followed by a corresponding divergence posteriorly. Lateral compression in lessening the cleft, produces likewise a deformity of the upper jaw.

"*Partial cleft* of the palate offers a very great variety of forms; but the following are some of the principal:—

"1. *Complete cleft except the alveolar process.* This variety may be bilateral, unilateral, complicated or not with hare-lip and cleft of the velum palati.

"2. *Cleft of the velum extending to the middle of the palatine vault.* This is an infrequent form.

"3. *Cleft of the horizontal processes of the palate bones.* This variety is as frequent as the division of the soft palate which accompanies it."

Langenbeck's Method.—The sitting posture may be selected to prevent the patient from swallowing too much blood; but the detachment of the muco-periosteal membrane can be more conveniently done while the patient is reclining. The use of chloroform is exceedingly inconvenient, and may be attended with considerable danger. But should it be absolutely required to give this anæsthetic, previous to its inhalation the most troublesome incisions should be made, and all hemorrhage controlled. Langenbeck remarks, that if chloroform be administered, a mouth speculum is indispensable. A piece of cork, having a string attached, may be placed between the teeth, and will be quite sufficient to permit the detachment of the periosteal covering. Since the publication of Langenbeck's first article[1] he has, in a more extended and important paper,[2] illustrated his operation by wood-cuts (see Figs. 1–5), which will exhibit more clearly some of the important stages of his procedure. The diffuseness of the original articles will not permit me to follow the author through all the details, but I shall endeavour, consistent with conciseness and clearness, to omit nothing of essential importance. Fig. 1, though only intended to illustrate his first form of cleft palate, and the side incisions, will aid in the general description of his method, which is divided into the following stages: The paring of the edges of the cleft; division of the palatine muscles; making the lateral incisions; the detachment of the soft parts; and, finally, the passage of the sutures.

The first form of cleft, as shown at Fig. 1, supposes an exactly median cleft of both the hard and soft palate, of moderate width, and having a ledge of bone which represents the horizontal processes of the maxillæ and palate bones. The operation is commenced by paring the edges of the cleft from the tip of the bifid uvula to the junction of the fissure anteriorly. The soft palate is held tense by a pair of forceps, and pared with a double edge lancet-shaped knife. Afterward the incision along the edge of bone, as indicated at *B*, is made through the periosteum, and one or two lines from the fissured edges, with small bistouries, having each a thick blade and convex cutting edge. The section of the muscles which elevate the soft palate, as described in his first article, is done with a sickle-shape tenotome knife (Fig. 2), which is thrust with the cutting edge upward into the soft palate, just below and little to the outer side of the hamular process, transpiercing the velum palati so far as to extend nearly to the

[1] Arch. für Klin. Chirurg. II. Band, I. & II. Heft. Berlin, 1861.

[2] V. Band Arch. für Klin. Chirurg.

posterior wall of the pharynx. This thrust being made obliquely backward and inward, the velum is then cut in its entire thickness as far as the posterior border of the palate bone. For thoroughly detaching the soft palate from the

Fig. 1.

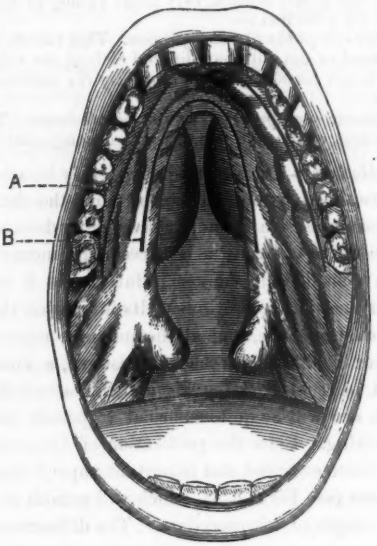


Fig. 2.

Fig. 3.

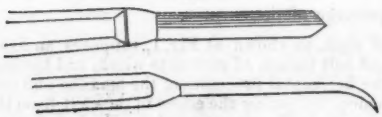
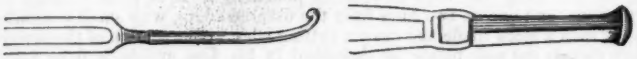


Fig. 4.



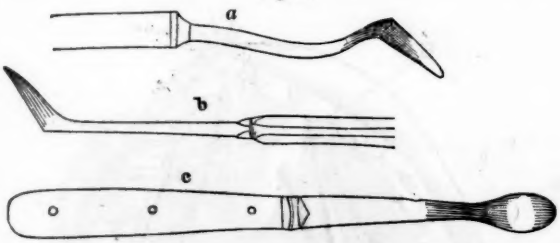
inner pterygoid plate, Langenbeck, at a later period, made use of other instruments (Figs. 3, 4). Fig. 3 represents a side and front view of a double edge, sharp-pointed knife, slightly curved near its point; and Fig. 4 a side and front view of a double-edge knife, curved in the same manner, but slightly knobbed at its distal extremity.

These knives are very convenient for thoroughly making the necessary detachment of the soft palate from its bony connections. The lateral incisions, as indicated at *A* (Fig. 1), and in this form of cleft, commence near the hamular process on each side, and extend along the inner side of the teeth to the space between the lateral and middle incisors. These side-cuts divide the mucous membrane and periosteum to the bone, being separated in front by a pedicle of gum tissue, which remains undetached, and corresponds to the anterior nutrient point from which the flaps receive a supply of blood. These lateral incisions, which are made with the knife (Fig. 5), are continuous with the incisions previously made in the soft palate, and which divided the palatine muscles.

Fig. 5.

In the next stage of the operation, the detachment of the muco-periosteal covering, *involucrum palati duri*, is commenced by inserting into the side cuts, represented at *A*, Fig. 1, an instrument (gaisfuss) of the shape seen at Fig. 6, *a*, *b*, *c*.

Fig. 6.



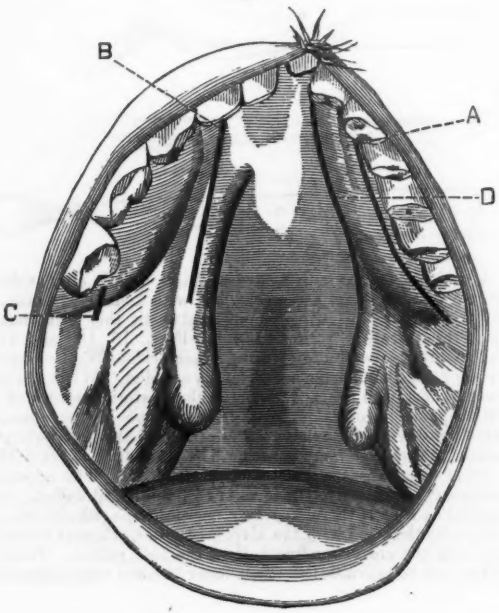
"Fig. 6, *a*, represents one with a curved shank, and *b*, *c* are side and front views respectively of the same instrument, but with a straight shank. The detachment of the periosteum being commenced with this instrument, is completed with blunt elevators represented by Figs. 15, 16, and 17, and the three nutrient points corresponding to the lower orifices of the posterior palatine, and anterior palatine canals, are carefully avoided. When the detachment of the periosteum has been effected as far as the posterior border of the palate bone, the velum palati becomes detached from the bone in the anterior half of its thickness; then the posterior mucous covering of the soft palate should be cut across close to the same bony border. The immediate effect of this detachment is to bring the flaps together without traction. The appearances are somewhat different according to the form of the congenital defect. But in such as is represented at Fig. 1, there are two narrow flaps, which are continuous in front with each other and with the alveolar border, whereas behind each one is continuous with the corresponding half of the soft palate. These flaps are thick, resisting, and so movable that their inner borders come almost in contact

before being united by suture. It may be incidentally mentioned that the denuded bone does not necrose, as some have thought, but is soon covered with a new periosteum. For the passage of the sutures, Langenbeck uses a needle such as is shown by Fig 14. This instrument is represented half size. A spiral spring is contained within the handle, which is continuous with a hollow steel shaft, having at its extremity a straight spear-pointed needle, which is also hollow from the little disk separating it from the shaft, to a notch below the point. The needle, which is eight or ten lines long, forms an obtuse angle with the shaft that contains a small cylinder at the anterior extremity on which is soldered a very delicate spring of the most resilient steel, such as is used for watch-springs. The little disk at the distal extremity of the shaft, prevents this from following the needle when it has transpierced the soft palate. The needle being passed from before backward, when it is perceived to be in the cleft, the operator presses with his thumb on the disk of the handle, and the little steel spring, with its hooked extremity, projects from the notch in the canulated needle, and curves forward. An aid, with a suture prepared as is represented at Fig. 14A, catches the silk thread in the hook of the little spring. In gradually ceasing to press on the disk, the spring re-enters the canula, drawing the suture into it. Then, with the removal of the needle, is effected the passage of the suture through one of the flaps. The little spring is again made to project, the thread set free, and its other end passed in the same manner through the opposite flap.

"From ten to twelve sutures are required when there is a complete cleft of the hard and soft palate. The first should be passed at the anterior angle of the wound, and the last should unite the ends of the uvula."

Langenbeck uses for uranoplasty and for staphylorraphy, silk sutures, which are certainly of more facile use than metallic ones, but silver wire is

Fig. 7.

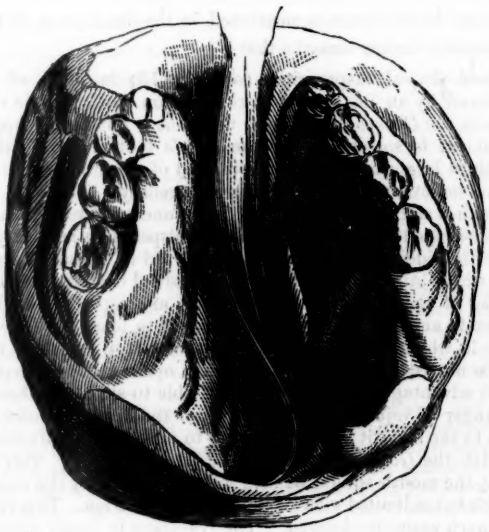


preferable. It is necessary to remove the silk threads on the fourth day, if not sooner. This is not the case with silver wire, which produces no irritation. Admitting that union of the parts be effected by this time, the advantages to be obtained in preventing undue strain on the newly-formed tissue which unites the flaps, is entirely lost by the early removal of the sutures.

The side incisions vary according to the nature of the cleft. The first form of congenital defect, illustrated at Fig. 1, I selected to aid in describing in a general manner the different stages of the operation. In the second form (see Fig. 7), Langenbeck observes that :—

"One of the borders of the cleft is nearly or quite horizontal, while the other ascends almost perpendicularly into the vomer and nasal septum. In these cases the operation upon the horizontal portion is the same as that described in the first method (Fig. 1, *A*), but the perpendicular portion requires quite a different procedure. The incision is made into the muco-periosteal covering just where it joins the nasal mucous membrane, *i. e.*, in the dividing line between the perpendicular ascending processus palatinus and the vomer. The incision extends the whole length of the cleft, from the velum to the gum (Fig. 7, *B*). The hook-shape raspatorium (Fig. 13) is introduced, and the muco-periosteal covering torn off for a short distance; the curved elevator is then inserted and the whole covering, together with the palatine curtain, stripped off from the inner surface of the alveolar process. This being done, this portion will immediately assume a horizontal position, forming a sort of valve, which remains

Fig. 8.



in connection with the alveolar process for its whole length and posteriorly with the curtain of the palate; the border of which can be brought in close contact with the flap of the other side. Only two of Langenbeck's cases were done after this method.

"In the third form of cleft, both halves of the palate are in a perpendicular position. The cleft is very wide, and in the middle of it the vomer can be seen lying free, running from behind forwards. The operation in cases of this kind is the same on both sides as that described for the perpendicular portion in the second method, *i. e.*, the incision on both sides is made at the line of junction, between the mucous covering and the nasal mucous membrane (see Fig. 8). The former is removed on both sides making the valve like flaps, which after having sunk down in a horizontal position will allow their free borders to come in contact. In order that the flaps may not yield and hang down too far in the middle line, it would be advisable to unite them at several points with the vomer. For this purpose the inferior surface of the vomer must be freshened by removing a very small strip of its mucous membrane. The sutures which are to fix the flaps to the vomer, are first passed through the border of the left flap, then through the soft parts of the under surface of the vomer, then through the border of the right flap. If the soft parts are insufficient and there is danger that the sutures may tear out, a single suture (the middle one) can be passed through the bony substance of the nasal septum. Three sutures at equal distances from each other, will be enough in any case. In cases where the vomer is situated very high up, it will not be possible to bring the flaps in contact with it, and yet, even in these cases, a few sutures will prevent the flaps from sinking too far down in the middle line.

"The first method can also be used in these cases, but it will be found difficult in this way to close the anterior angle of the cleft, and to do this a second operation will be required."

Concerning the instruments mentioned in the description of the operation, Langenbeck further remarks that:—

"The hook-shaped raspatorium (see Fig. 13) in most of the cases can be replaced by an instrument working upon the principle of a lever, which he calls the *Gaisfuss*, although the name is not exactly appropriate. This instrument is somewhat like the crow's foot of the dentists, being about one-third larger and wider, and instead of terminating in two claws, has an even, smooth, and almost cutting extremity. The form shown at Fig. 6, *a*, with a slightly curved shank, is the one preferred by Langenbeck.

"The hoe-shaped raspatorium is only indispensably necessary in those cases where the sides of the defect extend upward in a nearly perpendicular direction; where in removing the muco-periosteal covering we must begin at the border of the nasal mucous membrane, and especially in those cases where a certain amount of traction is necessary to tear off the periosteum. In all cases in which the periosteum can be *shoved*, *i. e.*, where the instrument can be moved in a direction from the operator, the *Gaisfuss* offers the greatest advantages, because it is less liable to slip, and there is therefore less danger of injuring the flaps. After the lateral incision has been made down to the bone, it is only necessary to make strong pressure against the bone with the *Gaisfuss*, and shove gradually along. This does not require that the mouth should be held wide open so that the operator can proceed with but a limited view of the field of operation. This renders the operation much easier in children. The *Gaisfuss* is chiefly useful for the

beginning of the removal of the periosteum, and after this must be replaced by the blunt elevator (see Figs. 15, 16, and 17). In order to fix the borders of the wound while these are being perforated by the needle instrument, Langenbeck no longer uses the hooked forceps, but exclusively a stout strabismus hook (*Schielhäckchen*), which is put into the border of the wound from behind forward. This instrument, which he also uses in staphylorraphy, has the great advantage that it never slips, while the frequent tearing out of the hooked forceps bruises the parts."

Although Simon speaks most favourably of Langenbeck's needle, it is, however, apparently not free from objections on account of its delicate mechanism; and Langenbeck remarks that:—

"He would gladly see this needle replaced by a more simple and better instrument, as his has the great disadvantage of easily getting out of order; the hooked-shaped extremity of the spring often bends upon itself, and sometimes breaks off entirely, so that it is necessary always to have several at hand. Again, it has the disadvantage of requiring an expert assistant to place the thread over the hook."

Langenbeck freely concedes that the side incisions are nearly the same as those of Dieffenbach, Baizeau, and Field, for the formation of mucous flaps in the closure of acquired defects of the palate, except that their incisions were less curved. The direction of the incisions is exceedingly important; but the formation of the flaps by Langenbeck from the muco-periosteal covering of the palate is remarkably original, and has the very great advantage, when properly performed, of not exposing the patient to dangerous and troublesome hemorrhage. The following cases operated by Langenbeck's method, although far from representing the number treated, will, it is hoped, be sufficient to direct the attention of American surgeons to this important procedure. For a more critical examination of the cases cited, the reader is referred to the original articles of the authors mentioned.

A.—*Cases of Congential Deficiency of the Hard Palate.*[1]

CASE 1. "G. S. T., countryman, æt. 22; bilateral cleft of the hard; complete separation of the soft palate and double hare-lip, which had been operated successfully in early life; total cleft two inches three lines long of the hard and soft palate; uranoplasty and staphylorraphy at one operation; cure, except a very small opening, which was ascribed to cutting through of sutures; speech improved, though nasal tone remains." (Operator, Beck.)

CASE 2. "F. M., mechanic, æt. 21; cleft of hard palate from junction of the anterior with middle third, and complete cleft of the soft palate; one inch five lines long, eight lines broad; uranoplasty and staphylorraphy at one operation; complete cure and dismissal at end of two weeks. Speech, which before the operation was completely indistinct, became pretty good and continued to improve." (Beck.)

CASE 3. "F. P., total left side cleft of hard and soft palate, two inches one line long, and eight lines broad; also hare-lip. The latter had been operated during infancy; left half of intermaxillary bone not well developed, and very oblique, so that its outer edge was almost entirely in left half of the nose; left incisor hardly visible; left ala of nose flattened and buried in the cheek; uranoplasty and staphylorraphy at one operation; perfect cure; dismissal in fourteen

days after operation; speech considerably improved; nasal tone remains, which the operator remarks cannot entirely disappear on account of the position of the intermaxillary bone." (Beck.)

CASE 4. "M. B., æt. 19; partial cleft of hard and complete cleft of soft palate; length of cleft one inch two and a half lines; breadth nine lines; uranoplasty and staphylorraphy at one operation; complete cure in fourteen days; secondary hemorrhage. The patient was kept very quiet, fed on cold milk; lumps of ice and cold compresses to the part for three days; sutures removed on the fourth day; remarkable improvement in speech, which was exceedingly indistinct before the operation." (Beck.)

CASE 5. "E. B., æt. 18; sister of preceding patient. Partial cleft of the hard and total cleft of the soft palate; length one inch six and a half lines; maximum breadth one inch two lines; excitable nervous temperament, feeble constitution; uranoplasty and staphylorraphy on same day as preceding case; operation very difficult; troublesome secondary hemorrhage, and distressing cough; cure incomplete." (Beck.)

CASE 6. "Median cleft of the velum; left-sided cleft of the hard palate (8 millimetres), $\frac{5}{7}$ inch wide posteriorly, and (5 millimetres) $\frac{3}{7}$ inch anteriorly; length of the whole cleft (35 millimetres) 1 inch $\frac{5}{7}$; staphylorraphy and uranoplasty 12th September, 1861, using silver sutures; operated three times; cure completed January 18th, 1862." (Operator, Billroth.)

CASE 7. "Æt. 2½; left-sided cleft of bony palate nearly half inch long; median cleft of velum; uranoplasty and staphylorraphy; silk sutures; slight union at anterior part of cleft." (Billroth.)

CASE 8. "Æt. 8 weeks; no mention of the extent of the deformity; uranoplasty; complete failure." (Billroth.)

CASE 9. "E. S., æt. 13½; median cleft of the velum palati; on left side, cleft of the arch of the palate to the incisor teeth; staphylorraphy February 6th, 1861; uranoplasty May 11th; complete cure June 24th, 1861; complete formation of bone; considerable improvement in speech." (Operator, Langenbeck.)

CASE 10. "M. M., æt. 24; medium cleft of the velum; on left side, fissure of the palatine vault, extending between the incisors; staphylorraphy and uranoplasty at one operation; fissure of the arch of the palate completely healed with solid formation of bone; velum ununited." (Langenbeck.)

CASE 11. "S. S., æt. 16; median cleft of the velum; double fissure of the arch of the palate to the alveolar process; staphylorraphy and uranoplasty at one operation, June 12th, 1861; incomplete cure July, 1861; fissure of hard palate almost completely closed; velum ununited." (Langenbeck.)

CASE 12. "C. L., median cleft of the velum and the horizontal portion of the palatine bone; staphylorraphy June 29th, 1857; uranoplasty June 10th, 1861; complete cure July 2d, 1861; deficiency of the palate completely closed without osseous formation; in the velum two small openings remain; speech defective, although improved." (Langenbeck.)

CASE 13. "D. L., æt. 22; deficiency of the left intermaxillary bone; operation July 6th, 1861; complete cure August, 1861; good formation of bone; there remains, however, a small slit in the alveolar process (einkniff)." Langenbeck.)

CASE 14. "J. L., æt. 23; median cleft of the velum; fissure on the left side of the arch of the palate extending to the incisors; uranoplasty August 8th, 1861; staphylorraphy May 7th, 1862; cure incomplete; velum palati very finely healed; bone fissure lessened by half." (Langenbeck.)

CASE 15. "A. K., æt. 22; median cleft of the velum; fissure on the right side of the hard palate extending to the alveolar process, one inch; staphylorraphy October 26th, 1861; uranoplasty December 7th, 1861; complete cure January, 1862; very fine form of the vault of the palate with solid formation of bone; speech had become perfectly distinct in the summer of 1862 (see Deutche klin., 1865, No. 1)." (Langenbeck.)

CASE 16. "M. G., æt. 26, total absence of the bony, and partial absence of the involucrum of the palate; median cleft of the velum, nine lines; staphylorraphy 1859; uranoplasty February 7th, 1862; complete union, no bony forma-

tion; two very small fistulæ caused by the sutures; slight improvement in speech." (Langenbeck.)

CASE 17. "A. H., æt. 23; median cleft of the velum; cleft on left side of the vault of the palate to the incisors, ten lines; staphylorraphy May 17th, 1862; uranoplasty June 4th, 1862; complete cure August, 1862; very fine form of the vault of the palate; perfectly distinct speech observed November, 1862." (Langenbeck.)

CASE 18. "F. S., æt. 15; median cleft of the velum; cleft on left side of the vault; deficiency of the alveolar process after resection of intermaxillary bones, seven lines; staphylorraphy April 30th, 1862; uranoplasty June 5th, 1862; complete cure July 26th, 1862; complete formation of bone; considerable flattening of the vault; very distinct speech." (Langenbeck.)

CASE 19. "J. R., æt. 9; median cleft of the velum; hard palate cleft to beyond the horizontal portion of the palatine bone in the median line; palatine bone cleft further than the involucrum. Staphylorraphy and uranoplasty at one operation, June 25, 1862. Complete cure July 16, 1862. Very fine form of the vault; no new osseous formation." (Langenbeck.)

CASE 20. "F. S., æt. 12¾; median cleft of the velum; double cleft of the vault; deficiency of the alveolar process after resecting of the intermaxillary bones seven lines. Staphylorraphy April 26, 1862; uranoplasty July 5, 1862. Complete cure July 26, 1862; no formation of bone; slight improvement in speech." (Langenbeck.)

CASE 21. "L. B., æt. 20; median cleft of the velum; of the horizontal part of the palate bone, and of the posterior third of the palatine process three-fourths of an inch. Staphylorraphy 1859; uranoplasty June 21, 1862. Complete cure July 28, 1862. Speech, which before the operation was entirely unintelligible, has become intelligible." (Langenbeck.)

CASE 22. "W. S., æt. 9; median cleft of the velum; of the horizontal portion of the palate bone, and of the posterior half of the palatine process of the maxillæ. Staphylorraphy May 24, 1862; uranoplasty June 28; and a second uranoplastic operation July 29. Cure complete August, 1862. Very beautiful formation of the velum and of the vault of the palate." (Langenbeck.)

CASE 23. "A. G., æt. 15; median cleft of the velum, of the horizontal portion of the palatine bone, and of the posterior half of the palatine process of the maxillæ, nine lines broad, one and a half inch long. Staphylorraphy July 19, 1862; uranoplasty Aug. 6, 1862. Complete cure Aug. 14, 1862; no osseous formation; opening, size of pin-head, remaining in the velum." (Langenbeck.)

CASE 24. "G. W., æt. 18; median cleft of the velum; cleft on right side of the vault to the alveolar process nine lines broad. Staphylorraphy July 19, 1862; uranoplasty Aug. 6, 1862. Complete cure Aug. 20, 1862." (Langenbeck.)

CASE 25. "M. P. F., æt. 9½; median cleft of the velum; double-sided cleft of the vault of the palate and of the upper lip; ossa intermaxillary removed; cleft nine to eleven lines broad. Staphylorraphy June 20, and again on August 9; (hare-lip operated 17th of preceding month); uranoplasty October 19, 1862; November 10, 1862, failure; upper lip very beautifully healed; breadth of bony cleft reduced throughout its whole length to three lines; cleft of the velum unchanged." (Langenbeck.)

CASE 26. "A. P., æt. 18½; median cleft of the palate; of horizontal portion of palatine bones; of posterior third of palate process of the maxillæ, six lines long and four lines broad. Staphylorraphy and uranoplasty at one operation, July 19, 1862. Cleft in the hard palate completely closed; velum separated again." (Langenbeck.)

CASE 27. "C. H., æt. 7; median cleft of the velum; cleft on left side of the vault to the alveolar process six lines broad. Uranoplasty August 16, 1862; Staphylorraphy October 29, 1862. Cure complete 20th November, 1862; good formation of bone in the new palate. In May, 1863, there was observed a solid formation of bone throughout the whole extent of the palatine arch. Considerable improvement in speech." (Langenbeck.)

CASE 28. "H. B., æt. 29½; median cleft of the velum; double cleft of the vault to the alveolar process, eleven lines broad; uranoplasty November 19;

Staphylorraphy December 15, 1862. Cure complete February 6, 1863. The left lateral incisure was entirely closed, however. Speech perfectly intelligible." (Langenbeck.)

CASE 29. "L., æt. 15; median cleft of the velum; complete double cleft of the vault and of the alveolar process; absence of intermaxillary bones, nine lines broad. Uranoplasty January 23d; staphylorraphy February 18, 1863, Cure complete April 1, 1863; complete new osseous formation; speech perfectly intelligible." (Langenbeck.)

CASE 30. "Æt. 3; palatine fissure in front $\frac{3}{4}$ths of an inch wide (0.010m.), and about $\frac{5}{8}$ths (0.017m.) opposite the insertion of the velum palati. The right side of the osseous cleft was $\frac{3}{4}$ths of an inch, and the left side $\frac{5}{8}$ths of an inch deep. Uranoplasty May 23, 1863; staphylorraphy May 30. Cure complete, except a narrow opening about $\frac{3}{8}$ths of an inch long behind the os incisivum. On 26th August, three months later, was unable to detect, with the point of a bistoury, any new osseous formation." (Operator, Sédillot.)

CASE 31. "Æt. 10; cleft of the soft palate; cleft of hard palate to the alveolar process. Uranoplasty and staphylorraphy; operation upon small opening which remained, uniting the arcus pharyngo-palatini. Complete closure of the cleft of the hard palate; arcus pharyngo-palatini united within ($1\frac{1}{2}$ centimetres), nearly half an inch under the uvula. Speech nasal, but intelligible." (Operator, Simon.)

CASE 32. "Æt. 10; cleft through hard and soft palates, and alveolar process; os incisivum wanting. Uranoplasty and staphylorraphy; repetition of latter after division of anterior curtain. Complete cure. Speech nasal, and hard to understand." (Simon.)

CASE 33. "Æt. 19; cleft through soft palate, and left side of hard palate and alveolar process. Uranoplasty and staphylorraphy; complete cure after spontaneous closure of a small opening. Speech nasal, and hard to understand." (Simon.)

CASE 34. "Æt. 16; cleft through hard and soft palate to alveolar process. Uranoplasty and staphylorraphy; complete cure after spontaneous closure of a small opening. Speech nasal, but intelligible." (Simon.)

CASE 35. "Æt. 10; cleft through soft and hard palate; alveolar process closed. Uranoplasty and staphylorraphy; complete cure after spontaneous closure of a small opening. Speech nasal, but more intelligible." (Simon.)

CASE 36. "Æt. 17; cleft through hard and soft palate; absence of the os incisivum. Uranoplasty and staphylorraphy; closure of a small opening afterwards; complete cure after the operation. Speech nasal, and hard to understand." (Simon.)

CASE 37. "Æt. 23; cleft through hard and soft palate. Uranoplasty and staphylorraphy; complete cure after spontaneous closure of a small opening. Speech less nasal; more intelligible." (Simon.)

CASE 38. "Æt. 25; cleft through hard and soft palate; alveolar process closed. Uranoplasty and staphylorraphy; soft palate closed, hard palate reopened; speech as before." (Simon.)

CASE 39. "Æt. 2; cleft through hard and soft palate; alveolar process closed. Uranoplasty; death on the tenth day from septæmia." (Simon.)

CASE 40. "Æt. 22; very wide cleft of hard and soft palate; alveolar process closed. Uranoplasty and staphylorraphy; cure after closure of a small opening; speech nasal, and hard to understand." (Simon.)

CASE 41. "Æt. 6; a very wide cleft through lips, alveolar process, hard and soft palate. Uranoplasty and staphylorraphy. Cure after closing the reopened soft palate. Speech nasal, but more intelligible." (Simon.)

CASE 42. "Æt. 12; very wide cleft through hard and soft palate. Uranoplasty and staphylorraphy. Complete cure after spontaneous closure of a small opening. Speech nasal, but more intelligible." (Simon.)

CASE 43. "Æt. 4; very wide cleft through hard and soft palate. Uranoplasty. Complete closure of hard palate. Speech nasal as before; was to return for staphylorraphy." (Simon.)

CASE 44. "Æt. 15 days; cleft through hard and soft palate; alveolar process

closed. Uranoplasty and staphylorraphy; closure of hard palate; reopening of anterior curtain. Death 26th day after operation." (Simon.)

CASE 45. "Æt. 7 months; cleft through hard and soft palate and alveolar process. Uranoplasty. Cure; was to come again for staphylorraphy." (Simon.)

CASE 46. "Infant few weeks old; double hare-lip; cleft of the hard and soft palate; narrow in front and gradually widening to six lines; on the left side the palatine process was oblique and united with the vomer; palatine process on right side vertical and very narrow. Uranoplasty and staphylorraphy; sutures successively removed from the 4th to the 7th day; union of the parts, but all except the anterior portion of the cleft soon separated and the operation failed. The parts suppurated and subsequently death occurred from exposure, inducing thoracic disease." (Operator, C. Otto Weber.)

CASE 47. "Miss A., æt. 25; absence of the palatine vault; with very rudimentary development of the palatine muscles. The broad chasm, through which were plainly visible the vomer and inferior turbinated bones, was limited in front by the gums of the incisors and a slight projecting ledge of bone, and laterally by the alveolar processes of the superior maxillæ. There was no ledge of bone on the sides of the chasm to represent the horizontal processes of the maxillæ or palate bones. The breadth of the long chasm was seven-eighths of an inch; the open space between the atrophied palatine muscles was more than an inch. She wore a light metallic obturator that slightly improved the speech, which notwithstanding this device was unintelligible to strangers. Staphylorraphy, 1st July, 1867, simply with a view to unite the uvula and add to the usefulness of the obturator; very partial union of the parts obtained. Two other attempts at staphylorraphy with most beautiful results, forming a thick, firm, and resisting bridge of the soft parts. One attempt at mucous uranoplasty; gangrene of the parts and failure. November 16th, attempt at periosteal uranoplasty by the method of "renversement:" dangerous hemorrhage and gangrene of the parts, which was stopped with creasote water. The only effect of this last operation was the narrowing of the cleft of the hard palate. March 12th, 1868, *periosteal uranoplasty by Langenbeck's method;* operation was executed with great facility except the passage of the sutures, for want of the proper kind of needles. July, 1868, complete closure of the chasm except a small opening, which appears to be closing spontaneously. Speech distinct and intelligible, but nasal." (Operator, Whitehead; see *Amer. Journ. Med. Sciences*, July, 1868.)

B. *Acquired Defects of the Hard Palate.*

CASE 1. "Æt. 39; circular aperture (nineteen millimetres) eleven-sixteenths of an inch in diameter just behind the alveolar process, result of syphilis; there were no teeth in the upper jaw; it was apprehended that sufficient tissue could not be obtained to close the opening. Uranoplasty; union perfect. Restoration of perfectly normal speech on 14th day." (Billroth.)

CASE 2. "H. W., æt. 14; deficiency in the bony palate, result of caries scrofulosa, nine lines long, six lines broad. Uranoplasty April 23d, 1862, and again June 5th, same year. Complete cure July 11th, 1862. Perfectly normal speech." (Langenbeck.)

CASE 3. "H. L., æt. 17; deficiency in the bony palate six lines long and five broad; absence of nose; caries and lupus scrofulosa. Uranoplasty May 17th, 1862. Complete cure July 1st, 1862. Perfectly normal speech." (Langenbeck.)

CASE 4. "M. H., æt. 56; deficiency of the whole right half of the bony palate, and of the upper jaw after resection; two inches long and thirteen lines broad. Uranoplasty 24th of June and again on the 5th July, 1862. Cure incomplete August 16th, 1862. Remarkably distinct speech." (Langenbeck.)

CASE 5. "Æt. 33; deficiency of the hard palate six lines in diameter. Uranoplasty August 12th, 1862. Cure complete November 20th, 1862; no new osseous formation; two suppurating suture holes remained." (Langenbeck.)

CASE 6. "Æt. 28; cleft (two centimetres) three-quarters inch long (twenty-five millimetres), about one-eighth inch wide in the raphé of the hard palate, near the alveolar process; uvula wanting; contraction of soft palate by cicatrix.

consequence of syphilis. The flaps were very small; the right flap torn at its anterior extremity. Complete cure by cicatrization after sloughing of one of the flaps. Speech nasal, but by practice more intelligible." (Operator, Simon.)

CASE 7. "Æt. 44; round opening three-quarters of an inch in diameter on the right half of hard palate; deficiency of the inner plate of the alveolar process and loss of two back teeth from gunshot wound. United the detached soft parts of the right half of the hard palate with the external covering of the alveolar process. Complete cure. Perfect restoration of speech immediately after closure of the defect." (Simon.)

CASE 8. "Æt. 42; round opening in hard palate at the median line. *Necrosis of palatine bones and vomer.* Formation of a flap. *Removal of necrosed bones.* Cured with exception of a small opening near the alveolar process. Natural speech by wearing an obturator." (Simon.)

Accidents which may occur during and after the Operation.—Hemorrhage, which may occur either during or after the operation, is sometimes considerable; Simon had primary hemorrhage originating from the lateral incision in two cases, in which the bleeding was controlled by injections of cold water and by pressure. In these same cases, and also in a third, secondary hemorrhage took place; appearing in two cases on the third day, and in one on the fifth, and persisting until the tenth day. These hemorrhages came also from the lateral incisions. Tamponing with lint and sponge proved unavailing. Simon was finally compelled to dip the lint in a solution of perchloride of iron, although he feared that this might act injuriously upon the line of union. These fears proved to be unfounded, the hemorrhage was arrested and union was not interfered with. Beck remarks that the bleeding usually occasions very little trouble, and that in one case where the superior palatine artery being anomalous, was cut; the hemorrhage was controlled by pressure and the application of cold water. In this case the nutrition of the flaps was not interfered with. If the palatine artery be cut, hemorrhage more or less troublesome should be expected. And, in order to provide myself against the recurrence of such trouble, I had at hand a spray instrument for projecting ice-water spray, and if necessary a cold styptic solution on the bleeding part. Hemorrhage is much more apt to occur in mucous uranoplasty than when the periosteum is separated from the bone; the little vessels are torn away and not cut, and in the detachment of this membrane a portion of the palatine artery is elevated with it. According to Langenbeck, "in fourteen cases where mucous uranoplasty alone was done, there were six cases of dangerous secondary hemorrhage, while in twenty-five of his cases where the periosteum was detached, there was no after-bleeding."

Sloughing of the flaps Simon noticed in two cases:—

"In the first of these the anterior attachment of the right flap to the alveolar process was torn off. In the second case the flap, which afterwards sloughed, was by a sudden movement of the patient's head nearly cut through, leaving only about the breadth of a line to preserve the connection. In the first case the opening made by the slough closed spontaneously. In the second case no cicatrization took place on account of the child's death. In all the other patients operated on by him, even in very young children, the operation was well

borne. Marked phlegmonous inflammation with pyæmic and septæmic symptoms occurred in both of the cases, attended with sloughing of the flaps. In both cases only the operation of uranoplasty was performed, but nevertheless the soft parts of both the hard and soft palate became swollen and œdematous even to the very tip of the uvula. The wound discharged thin offensive pus, and the swollen soft parts of the mouth were covered with a thick tallowy coating. In the first of these cases, there were repeated secondary hemorrhages; three marked chills, followed by significant elevation of the temperature and pulse, but the patient finally recovered. In the second case the child died on the tenth day after the operation from septæmia. (See case 39.)

"Simon remarks that other operators have observed these same phlegmonous inflammations, but the result was always fortunate, so far as life was concerned, though the operation was unsuccessful.

"So far as Simon is aware, the foregoing case is the only one where the operation of uranoplasty has been attended with a fatal result, and in consideration of the large number of cases in which it has been performed, the operation he states must be regarded as one attended with very little danger."

Gangrene of the flaps may occur after division of the palatine artery. I have observed this complication, and have promptly checked the disease by frequent detersive injections of creasote water. Weak creasote water spray is a most soothing and excellent application to the parts after uranoplasty, and, when thrown into the nares through the nostrils, contributes much to the comfort of the patient. Care should be taken not to project the jet of spray, when throwing it in the mouth upon the line of the united flaps, but in the side cuts and in the throat.

The after-treatment is very important: no talking should be permitted, and deglutition avoided as much as possible. Beck permits his patients to have only a little cold milk, and by spoonfuls at a time; on the fifth day he gives beef-tea, and not until the seventh soft eggs. He permits no solid food until the cure is effected. He remarks that "he thus avoids inflammatory reaction, needs no prolonged cold applications, or astringent gargles. When uranoplasty and staphylorraphy can be done at one operation, the cure is more complete, and the means required to combat inflammatory reaction no greater than when uranoplasty alone is performed." Leeches applied to the outside of the throat produce good results in abating inflammation. The patient may be fed on beef-tea on the second day, but no solid food should be permitted until the twelfth or fourteenth day. Beef-tea may be given in injection. Cotton slightly saturated with glycerine should be put in the side cuts to prevent strain on the sutures by the too rapid healing of the cuts; at the same time by this means, as Simon has very properly observed, the line of union is lengthened. The sutures, if of silver, should not be removed before the twelfth or fourteenth day, as they cause no irritation and give support to the newly-formed tissue. The middle sutures should be the last ones removed.

Modifications of Langenbeck's Method.—An important modification of this method by Simon is the freshening of the edges of the cleft after, instead of before separating the soft parts. A greater accuracy of approxi-

mation is thus secured. He makes the lateral incisions after the passage of the sutures.

The union of the parts which still gape is promoted by making incisions for extension just long enough to secure the coaptation of the borders. Langenbeck regards interrupted side incisions sufficient in most cases to readily secure approximation of the pared edges. In two cases Simon considerably modified Langenbeck's operation :—

"In one there was a deficiency on the right side of the palatine vault and also a loss of the alveolar process of the same side, caused by gunshot wound. The deficiency measured one and a half centimetres in diameter, and was about one centimetre from the raphé. The speech was strongly nasal. To close this opening Simon united the external covering of the alveolar process of the right side with the soft parts of the right side of the palate, because on the right border of the defect there remained only the soft parts of the external portion of the alveolar process. He removed with bone forceps the remaining portions of the alveolar process projecting into the opening. Then the soft parts of the palatine vault were detached towards the left and made movable by a free incision at the side. These parts were now drawn over and united with the external covering of the alveolar process, which had been separated by incision from the mucous membrane of the cheek. Langenbeck, and Wagner, of Königsberg, have used the gums in uranoplasty successfully."

In the second case Simon performed a very remarkable operation, which—

"Not only closed a defect of the palate, but also aided in the removal of necrosed portions of bone consisting of the palatine process of the upper jaw and the vomer. By forming a long tongue-shape flap, which remained only in connection with the anterior pillar of the soft palate, sufficient room was obtained to reach the dead bones and remove them."

Simon has attempted but one case of what he calls osseous uranoplasty: "In the hope of obtaining more intelligible and less nasal speech. The patient was a child twenty weeks old, having a small cleft in the posterior part of the hard palate and cleft of the soft palate. The operation was a failure."

Dr. Elsberg kindly called my attention to an operation performed by Prof. Thiersch, of Leipsic, recently published. (*Arch. für Heilkunde*, 2d Heft, 1868, p. 159.)

The defect of the palate which necessitated an operation in this case was the result of a pistol shot, and was two and a half centimetres long, and two centimetres broad. Uranoplasty had been done, and the bones so much denuded as to cause necrosis—which, however, is an exceedingly rare occurrence. Afterward, an obturator affording no relief, the patient, being very much incommoded by the infirmity, applied to Thiersch, who used successfully a flap, taken from the entire thickness of the cheek, to close the opening. This flap remained adherent to the cheek superiorly, and its free portion was transplanted and secured by suture to the pared edges of the opening in the palate, and afterward the outside wound of the cheek was approximated by suture. The operation succeeded.

In the cutting of the palatine muscles, Beck, as already recommended by

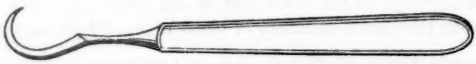
Pollock in his operation, first passes a silk suture through the soft palate, and then cuts with the sickle-shape tenotome knife of Langenbeck.

The sharp-pointed, double-edge knife, curved on the flat, represented at Fig. 6, appears to me to be a dangerous instrument; apprehending which, I had a similar instrument made, but terminating with a very delicate probe point. For the side cuts a knife, with a convex cutting edge and thick

Fig. 9.

back, represented at Fig. 9, was very handily used; and for the thorough division of the palato-glossus, and especially the palato-pharyngeus, such a sickle-shaped knife as is represented at Fig. 10.

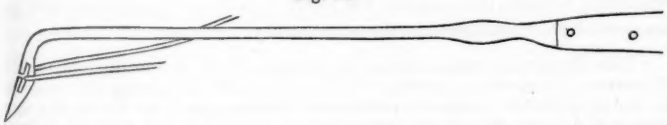
Fig. 10.



This last instrument, I believe, will be found very useful in dividing completely the pillars of the fauces in staphylorraphy.

Beck attributes great importance to his needle instrument, seen at Fig. 11.

Fig. 11.



The one which I have had made is shaped like Stone's aneurism needle (see Fig. 12), and is a simple, inexpensive, and effective instrument, which I propose to use in future. These instruments are represented half

Fig. 12.

size. Mr. T. Smith, in a paper on the cure of cleft palate in children, read before the Royal Medical and Chirurgical Society, on the 14th of June, 1867, mentions a very successful plan of operating for fissure of the soft palate, by the aid of a properly devised gag and chloroform, and alludes favourably to the use of gut sutures. Mr. Smith's operations were confined to staphylorraphy, though in nine of his eleven cases the deformity involved the bony palate, no operation being attempted on the hard

palate. (See *American Journ. of the Med. Sciences*, April, 1868.) The reproduction of bone after Langenbeck's operation has been observed in only a certain proportion of the cases; but the fact is sufficiently well established to make it an important feature of this new method.

As this subject is new, and the experience of it limited to a small number of surgeons, I shall continue to quote from Simon's paper, as I have already from the publications of Langenbeck. As I am desirous that ample justice shall be accorded to the views of the distinguished surgeon of Rostock, now of Heidelberg, and especially to those concerning the influence of uranoplasty and staphylorraphy on the speech, it is proper that I should defer comment upon this subject until his opinions have been fairly exposed, and then frankly and unreservedly, by the light before me, judge them with impartiality.

Influence of Staphylorraphy and Uranoplasty upon the Speech.—This very important point has received attention from Simon, and he attaches very great importance to the obtaining of an absolute purity of speech; that is, without the least admixture of nasal tone. He remarks:—

"Unfortunately, the results thus far have not realized our expectations. In many instances, indeed, the speech has been materially improved; but only in a few cases of acquired defects, where the curtains of the palate remained intact, has the speech been *completely restored*."

The immediate cause of the nasal tone when it persists after a successful operation, he very properly attributes to the abnormal communication still remaining between the nose and the pharynx and the penetration and resonance of the vocal tones in the nasal cavity.

"This abnormal communication," he observes, "can depend upon a variety of causes. Langenbeck (*Arch. für Klin. Chir.*, Bd. 5) believes the cause to be due to faulty innervation, or paralysis of the muscles of the velum, like that seen in diphtheria, and also ascribes as another cause the bad habit of pronunciation." Simon, however, has recently had an opportunity to put this theory to a fair test: "Having a case of paralysis of the throat from diphtheria in a young man twenty years of age, he placed this case in direct comparison with one of united cleft palate in a young woman twenty-one years of age. In both cases the admixture of the nasal tones was present in a very high degree, but Simon convinced himself that the imperfect closure of the communication between the nose and the pharynx arose from totally different causes. In the case of diphtheria the paralyzed curtain of the palate had lost almost entirely its arched form, and hung down nearly at a right angle upon the back of the tongue, so that the velum was distant from the posterior wall of the pharynx more than the third of an inch, leaving a correspondingly abnormal communication between the pharynx and the nasal cavity. In pronouncing 'A' and 'Ach' the muscles did not move, the curtain and arcus remained in their abnormal position, the opening was not shut, and the nasal tone remained. In the case of united cleft, on the contrary, the muscles moved most vigorously (in pronouncing the same sounds), the curtain attempted to arch upward, and the arches to approach each other, but the palate was too short, the tension of the arcus too great to permit the opening to be closed. The diphtheritic paralysis disappeared in the course of two months, and the speech became again pure. In the case of the cleft, now for two years united, the speech has not improved. The explanation of bad habit seems to Simon unsound. He remarks that

Langenbeck cites as proof of the influence of bad habit, a case of twins, sixteen years old, where the patients, after cure of congenital cleft palate, spoke imperfectly for a long time, but in the course of a year their speech became pure. That in this case, observes Simon, muscular paralysis was the cause of the remaining nasal speech can hardly be doubted, but from the very fact that the speech in the course of a few months became pure shows that there are other causes which interfere with the recovery of the speech, for although the operation has been very generally adopted for the last five years, and attended with the most complete success, there is not yet a single well-authenticated case where the speech has been *made pure*, by the gradual cure of the paralyzed muscles, or through exercise. Even in the cases of spontaneous cure which Simon and other authors have observed, the speech had still the nasal tone. Here, remarks Simon, certainly there could be no muscular paralysis. For these reasons he cannot adopt Langenbeck's view. He states that according to another view put forth by Passavant, of Frankfort (*Arch. der Heilkunde*, von Rosen und Wunderlich, iii., 10 und 16, und *Arch. für Klin. Chirurg.*, vi., bd. ii.), the abnormal communication and admixture of the nasal tones depend upon shortening of the palate caused by a want of development of the lateral halves, so that the palate loses in length what it gains in width. This view, with certain modifications, Simon adopts as the correct one. Shortening of the palate, he states, must remain after every operation for cleft of the hard palate, and also after every staphylorraphy, and to this must the abnormal communication and nasal tone be ascribed, but the palate is not absolutely but only relatively too short, and he does not believe, with Passavant, that the shortening depends entirely upon a want of development of the lateral halves, but more especially upon contraction of the extensive cicatrix, which binds the two lateral halves together. Simon asserts that a contraction of the cicatrix must obtain in all cases and must be proportionately very considerable: He remarks that the degree of contraction produced in long cicatrices can easily be observed in cases of harelip operated upon by the old method; the resulting shortening in these cases often amounting to one-third of the whole height of the lip. This same contraction is also exerted after uniting a cleft palate, and indeed to such an extent that he has observed small transverse openings become completely closed after the operation of uranoplasty. This contraction also obtains in cases of spontaneous closure, Langenbeck himself having noticed this (see work already quoted, p. 73). The contraction of the cicatrix, and consequent shortening of the palate, depend upon the length of the cicatrix and the mobility of the parts. In wide clefts, where all the soft parts are separated from the bones, and the parts united in their whole length, the contraction will, of course, be greater than in small clefts at the posterior part of the hard palate. For the same reason the shortening of the curtain of the palate will be far greater where the bones are not united at the spina nasi, and the soft parts only are closed, than where the bones are united. In the first instance the cicatrix continues to contract on the fissure between the bones, while in the second, the contraction of the cicatrix meets with resistance at the point where the bones are united. The shortening, according to Simon's observations, is never in any case so extensive as to make the palate absolutely too deficient for closure of the communication between the nasal cavity and pharynx, but yet even in the most favourable cases, for example, those in which spontaneous closure ensues, the abnormal communication still remains, and nasal speech is the consequence. This happens not because the curtain of the palate is absolutely too short, but because the contraction unfortunately is exerted in a most unfavourable position, viz., at the back of the velum, which serves for the closure of the nasal cavity. Not only this: the free border of the velum and the uvula, which also aid in closing the nasal orifice, are prevented from being raised high enough to perform their office in spite of the most active muscular efforts. The back of the velum instead of rising to meet the constrictor pharyngis superior, is thrown forward and the arcus rendered more tense than in the normal condition of the parts. Simon believes this to be the true explanation of the cause of nasal speech even after the most favourable operations. According to him, the fact that in every case the nasal speech can

be made almost pure by forcible elevation of the velum with a spatula, so that its free border may come in contact with the constrictor, pharyngis superior, needs no explanation. This experiment, he states, thus far proved successful in every case in his hands, even in those where the shortening was very great. Simon's observations lead him to this conclusion: that in all cases of cleft palate in which the hard palate is not united at the spina nasi the contraction of the cicatrix will be so great that the nasal tone will predominate. In the two cases of cleft of the soft palate cited in the table of his paper, the nasal tone persisted after successful staphylorraphy. In both of these, however, a small opening in the bones could be felt through the soft parts. Again, in all those cases of spontaneous closure where the bones were not united at the spina nasi, the same nasal tone has remained. Therefore, it would seem to follow, according to his view, that uranoplasty will never enable us to restore the *purity of speech*, and that even in simple cleft of the soft palate we may look for a favourable result with regard to purity of speech only in those cases where the hard palate is united at the spina nasi, in which latter the contraction of the cicatrix is confined to the soft palate. From the foregoing, he says, it appears evident that we must not only strive to close the soft parts of the palatine arch, but also the bony portions at the spina nasi, or, as Passavant has indicated, to lengthen the palate in such a manner as to enable it to come in contact with the posterior pharyngeal wall. Simon next alludes to means and plans proposed to remedy the defect in speech; he regards regular daily exercise of the organs of speech as useful in training the lips and the tongue to more distinct articulation, but so far as the nasal tone is concerned, *vocal exercise* does no good, even when faithfully persevered in for years. With regard to exactitude in the performance of the operation, or modifications of the same, he does not think that much can be hoped for, so far as prevention of the nasal tone is concerned. He observes that Langenbeck has laid great stress upon performing the operation with interrupted side incisions, and also upon closing the cleft, if possible, by one operation, and never exceeding two. Simon has followed these suggestions but without success in bettering the speech, nevertheless the method of performing the operation will have some effect upon the degree of nasal admixture in the speech, and is therefore of importance. In those cases in which the lateral halves are pretty well developed, a successful and proper performance of the operation will make the speech much less nasal and far more intelligible. Simon says that it has also been thought that by operating upon very young children the nasal tone would be gradually done away with. With this view Billroth, C. O. Weber, and himself have undertaken the operation. But these hopes, after the observations which have been made in spontaneous closure, must be given up. In one of these cases of spontaneous closure, the child has now reached the age of seven years, and the nasal speech still remains. Simon states that Passavant has devised several operations by which, after staphylorraphy and uranoplasty, a diminution of the communicating opening between the nasal cavity and pharynx may be effected. These operations are: 1st. The bringing together of the palato-pharyngeal arch. Simon has tried this, and is convinced that it will bring no material aid. The united arch will not permit the back of the posterior curtain to be raised high enough to cause closure and the speech still remains nasal. 2d. Bringing the uvula in contact with the posterior wall of the pharynx as high up as the constrictor pharyngis superior. The pharynx is freshened, and also the posterior part of the uvula and the posterior curtain. The latter part of the operation is rendered less difficult by separating the curtain by transverse incisions and drawing it forward. In this way the posterior part can be brought to view, and by proper instruments freshened. By means of sutures, which fasten the curtain to the pharynx, the parts are so united that only a small opening remains at the side of the uvula; this opening, by the action of the superior constrictor of the pharynx and the muscles of the adherent velum, can be momentarily closed. Passavant has performed this operation upon a girl fourteen years old and the result was speech in which, although the nasal tone had not entirely disappeared, approached very nearly perfection. Simon finally proposes an operation of osseous uranoplasty, wherein he attempts

to combine the advantages of the old method of Dieffenbach with those of the new method of Langenbeck. Thus far he has tried this operation in but one case, and this one was a failure. He thinks that a more extended trial should be made of his method, especially upon adults, before its merits or demerits can be fairly determined."

To accept the expressions of Simon regarding the results of this operation on the speech as a final decision of the question, without a fair appreciation of the advantages which are distinctly stated by other operators, would be as incorrect as to attribute to uranoplasty an invariably excellent result. From a careful examination of the facts before us, we can readily perceive that in nearly every case properly operated by this method there was a considerable improvement in speech and of the condition of the patient. Simon attaches great importance to purity of speech, and by this he means, speech without the slightest admixture of nasal tone. In this respect it is to be doubted that very many of the cases are entirely relieved of this defect. As Langenbeck and others have shown, *distinctness of speech* may be obtained in nearly all cases. If there remain a nasal tone, however, and it be very considerable, especially in the Anglo-Saxon languages, necessarily the result of the operation is marred. Nasal tone, when not very great, is perfectly consistent with intelligible speech, as is attested by many who are not affected with cleft palate, and whose speech though nasal is quite distinct. Indeed, a more or less nasal accent in the pronunciation of certain words of our own, and several other languages, constitutes purity of speech. In the German language such is not the case. A much regretted French surgeon, Malgaigne, whose very marked nasal accent gave a peculiarity to his talented discourses, which were at times distinguished by sharp sarcasm, offered an eminent example of an exaggerated, but distinct nasal tone. A distinct speech, even though nasal, may be regarded as exceedingly desirable for those who, being affected with cleft palate, cannot, except with great difficulty, be understood, especially since, by surgical aid and subsequent vocal exercise, they may obtain a distinct and perfectly intelligible articulation. In an impartial examination of this subject, the question which interests the surgeon and especially the patient, is to know all the advantages to be obtained by this operation, and such advantages are not fairly stated when a defect, which is often comparatively inconsiderable, is made the basis of a criticism adverse to the general results of the operation. Besides, I must admit that I cannot conceive how Simon expects, by his operation of osseous uranoplasty, to obtain results which will improve the speech beyond what is already claimed for Langenbeck's procedure. I recognize with pleasure the ingenuity and bold originality of Simon's operation, and think that, had it only been successful, it would have deservedly won from the Berlin surgeon some of his laurels in this department of plastic surgery. I do not think that Simon has fairly accredited Langenbeck's statements with regard to the results of his operation on the

speech, and especially his case of twins, in which he distinctly declares that the speech became perfectly natural.

Langenbeck remarks that if, after closure of a cleft palate, the remaining difficulty of speech depends upon muscular insufficiency of the tongue, and especially of the soft palate, then the question arises whether or not, with lapse of time, a completely normal speech may not be expected; *he replies, I can answer this question in the affirmative most positively.* (*Arch. für Kl. Chir.*, page 74, V. Bd.)

Beck observes that deglutition was made good, and remarkable improvement of speech obtained in all of his cases. Beck also adds that some surgeons object to the operation on the ground that speech never loses its nasal tone; but that facts are different; that vocal gymnastics, as reading aloud, etc., make the speech from day to day clearer. He observes that a very important advantage gained by the operation, is that the flowing down of the nasal secretions is prevented.

When the cure can be obtained by a single operation, or at most two operations, the result is necessarily much better, as too great an inodular contraction subsequently is avoided.

Of course the degree of improvement in speech will always, more or less, be subordinated to the previous extent of the deformity and other circumstances, especially the particular mental aptitude of the patient. Here I should remark that the force and distinctness of speech are very much increased in those persons who speak more from the front of the mouth than from the throat, and this is especially aided by a large, deeply-arched palatine vault. Such persons sometimes have the peculiar faculty of producing without effort a remarkably loud and distinct articulation, which far exceeds the ordinary volume and force of the human voice. The palatine vault, as the sound-board of the voice, if very flat, is less favourable to a concentration and projection outward of vocal sounds, and when this is the case, the distinctness of those sounds must necessarily depend somewhat upon this peculiar form of the hard palate.

Consequently the difference in the result obtained on different patients, who have been operated for cleft of the soft palate, may be very considerably influenced by this form of the vault, and it is always desirable in operating for cleft of the hard palate to give, if possible, a good shape to the roof of the mouth.

The views of Simon regarding the production of nasal tone have been anticipated by a distinguished and remarkably skilful dentist[1] of this city, who has devised an obturator, which I believe to be far superior to any other mechanism of this kind. In connection with congenital cleft palate,

[1] Congenital Cleft Palate: Paper read before the New York Academy of Medicine. By Norman W. Kingsley, Professor of Dental Mechanism in the N. Y. College of Dentistry. Reprinted from the Bulletin of the Academy, Jan. 1866. pp. 15.

this gentleman remarks that the velum exercises a more important office in the modulation of sound than any other organ except the tongue. He observes that to produce certain sounds the passage from the pharynx to the posterior nares should at times be entirely closed, while for other sounds, it should be entirely open, permitting the whole voice to pass in that direction. He also makes the practical observation, that the large size of the nostril gives a peculiarly unpleasant tone to the voice of patients having cleft palate complicated with hare-lip, and that during the operation for this defect of the lip the size of the nostril should be lessened. Certainly very few surgeons and a still smaller number of dentists have heretofore possessed such clear and practical views regarding the influence of the velum palati upon the speech.

Mechanical Treatment of Cleft Palate. Obturators.—As these devices are designed to effect the same purpose as the operation of muco-periosteal uranoplasty, it is but proper to allude to them. They have their incontestable advantages and their defects, and are at best but mechanisms and makeshifts, which uranoplasty may most frequently replace, but which perhaps are occasionally to be preferred to this operation.

Baizeau, in allusion particularly to acquired defects of the palate, remarks that the obturator is only a palliative means, and should be removed each day to avoid irritation, and that this mechanism is a cause of inconvenience and opposes the radical cure of the perforation. So that notwithstanding the utility of the obturator, is it preferable where it is possible to obliterate the opening by a surgical operation? Baizeau further observes that the obturator may be swallowed and produce serious trouble. Hévin relates, in his memoir upon foreign bodies in the œsophagus (*Mémoires de l'Acad. Roy. de Chirurg.*), a case in which a cork obturator covered with a silver plate, was found in the throat of a woman whose death was supposed to have been caused by poisoning; the obturator had fallen into the pharynx and occasioned asphyxia. This accident, however, is said to have occurred with false teeth, and would not be urged against the wearing of these useful appendages. Nevertheless some danger may possibly be apprehended from obturators, especially if composed of several different parts and badly adjusted.

Kingsley's obturator appears to be ingeniously adapted for occluding the buccal from the nasal cavity; this instrument is in part composed of soft rubber, having on each side a deep groove which fits each lateral half of the soft palate, and the movements caused by the contractions of the undeveloped muscles of the cleft velum are communicated to a thin rubber curtain which supplies the offices of the natural velum. Other obturators, with perhaps very few exceptions, probably fail to afford as good results, and I have no doubt that the success which is said by some to attend the use of this instrument, is mainly due, entirely independent of its correct

principle of action, to the peculiar mechanical skill with which this obturator is adjusted to the mouth of each patient. The extreme probability of this supposition is attested by the skilful and intelligent co-operative mechanical assistance which this dentist has afforded to certain surgical attempts at reparative operations about the face.

Mechanical approximation of the maxillæ has been attempted in young subjects affected with cleft palate, and with variable success. Jourdain used metallic wires, fastened to the teeth. Levret, Autenreith, and Dupuytren, either by a properly devised apparatus, or extemporaneous means such as compresses and an ordinary roller, exerted a very forcible compression on the maxillary bones from without inward. Successes by this mode of treatment are attributed to Pointe, of Lyons, and Maunoir, of Geneva. This method has generally produced only incomplete results, and, besides, is painful and difficult. Dr. Louis A. Sayre informs me that he has obtained a most excellent result by this mode of compression.

It is impossible for me at present to determine the full extent of the usefulness of Langenbeck's operation on the speech; but I feel convinced that in most cases of congenital and acquired defects of the palate this operation should be preferred to other modes of treatment, as affording a permanent means of relief, and as a far more certain surgical procedure than any that has heretofore been attempted for cleft of the palatine vault. This operation may be especially productive of good results in those cases in which there is a moderate sized fissure of the bony palate, and a good development of the lateral halves of the cleft velum. Langenbeck thinks, however, that there is no form of cleft palate to which one of his three methods of operating may not be advantageously applied. In acquired defects of the palatine vault, when possible, this operation should always be selected as offering the best results of any mode of treatment.

NEW YORK, 23 FIFTH AVENUE, June, 1868.

FIG. 13.—Front view of hook, or hoe-shape raspatorium.

FIG. 13*a*.—Side view of same.

FIG. 14.—Needle instrument.

FIG. 14*a*.—Suture holder.

FIGS. 15, 16, 17.—Front views of the curved blunt periosteal elevator of different sizes.

FIGS. 15*a*, 16*a*, 17*a*.—Side views of the same instruments.

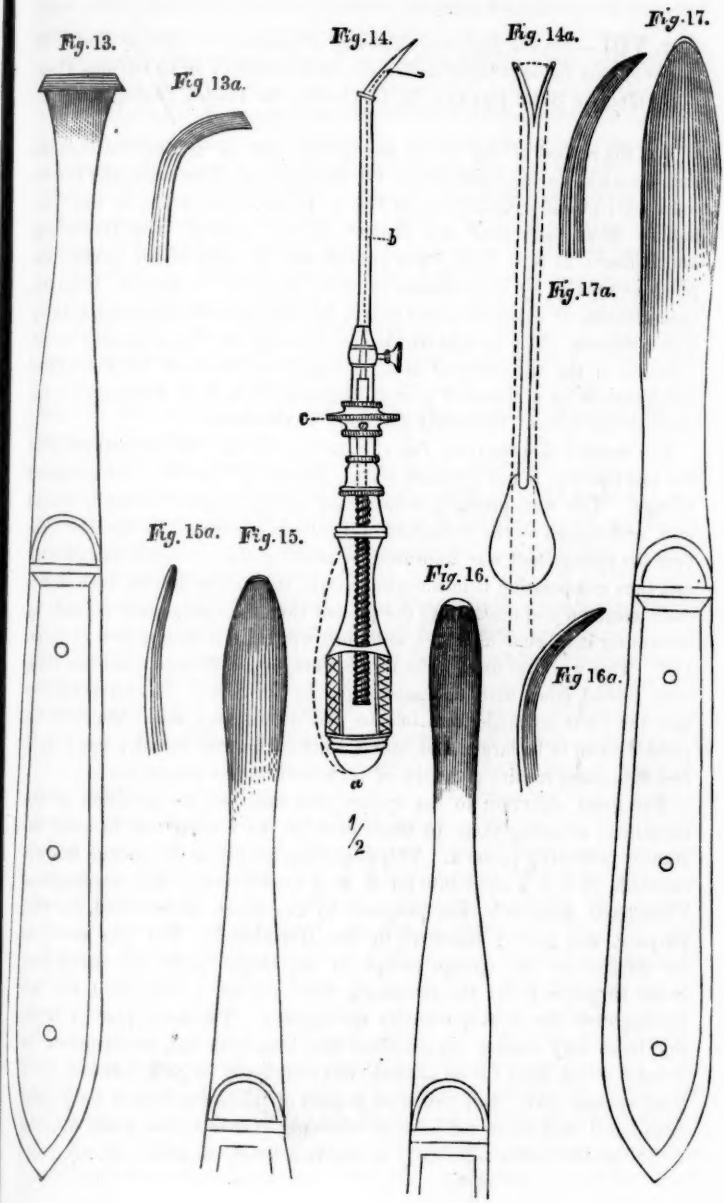


Fig. 13.
Fig 13a.
Fig. 14.
b
c
a
1/2
Fig. 14a.
Fig. 17.
Fig. 17a.
Fig. 15a.
Fig. 15.
Fig. 16.
Fig 16a.

ART. VIII.—*On the Different Modes of Preparing the Sponge Tent, with Directions for making it Antiseptic, and Remarks on its various Uses.* By GEORGE SYNG BRYANT, M. D. (late of St. Louis), Lexington, Ky.

FOR the revival of the use of the sponge tent, in uterine contractions and diseases, we are indebted to Dr. Simpson, of Edinburgh, and for its more efficient and extended use to Drs. J. H. Bennet and Tilt, of England, and Dr. Sims, Batchelder, and Emmet, of this country. Drs. Batchelder and Roberts, of New York, have pointed out the value of the sponge, applied externally by compression in many forms of ulceration, tumours, enlargements of bones, etc., and also of the tent in healing sinuses, fistules, and abscesses. The sponge tent is now regarded by Gynæcologists as invaluable in the treatment of many diseased conditions of the womb, and indispensable as a means of correct diagnosis when it is necessary to explore the cavities of the cervix and body of the uterus.

The manner of preparing the sponge tent for use by surgeons prior to the last century, is not precisely stated, though all mention the prepared sponge. This was, probably, compressed sponge, soaked or not in melted wax, and shaped as the necessities of the case required. In the last century the sponge tent was improved by soaking the sponge in melted wax and then compressing it in a conical shape, the sponge having been previously cleansed and dried. At the present time the sponge tent is made by saturating it in gum mucilage, and then wrapping it with a cord upon an awl. This was first used, in its rough state, by Dr. Simpson, but has since been rubbed down with fine sand-paper by Dr. Sims. The latter advises that the tents be made from one to two inches long, and when fully expanded some to be larger and others smaller than the thumb; but I have met with cases requiring the use of tents both longer and larger.

The great objection to the sponge tent has been its retention of the secretions, allowing them to decompose in the uterus, and in some instances producing pyæmia. This absorbing quality of the sponge made it desirable to find a substitute for it as a uterine tent. The sea-tangle—"laminaria digitata"—was proposed by Dr. Sloan, of Scotland, for this purpose, and greatly improved by Dr. Greenhalgh. But this article is far inferior to the sponge except in the single quality of cleanliness. Some surgeons prefer the sea-tangle when the os is very small, not admitting even the most diminutive sponge tent. The usual plan of treating these very narrow constrictions has been with metallic stilettes, or wooden stems, until the os or canal was sufficiently large to admit a small sized sponge tent. But this slow process of dilatation I have long since abandoned, and am in the habit of resorting at once to the knife, opening up the os and cervix sufficiently to receive a small, carbolized sponge tent;

after which there is no further trouble in effecting dilatation to almost any desirable degree.

For opening the os and cervix I have added another blade, with a probe point, to Dr. Sims' blunt-pointed ball-and-socket knife. With this blade the nicking operation is perfectly safe; for the probe point can only find its way along the canal, and the cutting edge can do no more than follow the probe point, simply nicking the mucous membrane to the extent of the width of the blade, which should not exceed one-eighth of an inch.

If the objection to the sponge as a nidus for putrid secretions can be obviated it is evidently the best material yet known for dilating the os and cervix uteri. In the *American Journal of the Medical Sciences* of July, 1867, will be found a formula for making the sponge tent antiseptic, by Dr. J. C. Nott, now of New York. He prepares the sponge in the usual way, then saturates it with an antiseptic paste, composed of alum, acetate of lead, wheat flour, and gum-water, heated to the boiling point, and wraps it with gold-beater's skin. It is then punctured freely with the point of a small knife blade.

Mr. Robert Ellis describes (see *Amer. Journ. Med. Sci.*, January, 1868, p. 276) a method of carbolizing the sponge tent by passing threads saturated with carbolic acid through the centre of the sponge longitudinally, which is then rolled into shape and covered with cocoa butter, to which is added a little glacial carbolic acid.

For more than eighteen months past I have been in the habit of using ten or twelve grains of crystallized carbolic acid to one ounce of thick gum mucilage, prepared for saturating the sponge tent before being wrapped with cord. This mode of mine for making the sponge tent antiseptic is well known in St. Louis, and to many of the profession in Louisville and elsewhere. The carbolic acid not only renders the sponge antiseptic, but its styptic qualities add much to the efficiency of the sponge in many diseased conditions of the mucous membrane. In preparing the tent moderately coarse, elastic sponge should be selected. Cleanse it well, cut while wet into the exact shape and size preferred; saturate it with gum mucilage, prepared as before described, and wrap it on an awl, with a strong, coarse, well-twisted cord. The tent should be fusiform in shape, and wrapped from the small end, as directed by Dr. Sims, taking care to keep the layers of the cord as they are carried around the sponge with perfect regularity, in close proximity to each other. By leaving the screw threads—not cutting them down with sand-paper—the tent can be much more easily introduced; giving it a turn, as to an ordinary screw, in the act of inserting it. When made in this way the tent does not slip out, as a smooth one is apt to do; and it should not project more than one-eighth or one-fourth of an inch out of the os. The best instrument I have found for introducing the tent is a pair of small, straight forceps, with an attachment to the handles to make fast the blades. The tent, firmly fixed in the forceps, is

inserted as above directed, the uterus being held by a volsella or hook. The tent should always be slightly soaped, more particularly at the small extremity, to enable it to pass in with less friction.

For the last fifteen years the sponge has been fully appreciated by the gynæcologist, superseding, in many instances, both the knife and cautery. Among the numerous uterine diseases and derangements which are most frequently benefited by its use may be mentioned the following: Granular erosions of the os and cervix uteri, which, when treated by the sponge, but seldom fail to disappear in a short time, and the mucous membrane becomes smooth and natural.

Fungoid granulations, which are often a source of great annoyance to the surgeon and distress to the patient, soon disappear under proper use of the sponge tent.

Fibrinous infiltration of the os and cervix may exist alone and in complication with many diseased states of the uterus; as erosion, fungoid granulation, subinvolution, ulceration, elongated neck, constrictions, and flexions with or without retroversion or anteversion. Not only will the infiltration disappear under the use of the sponge tent, but also the complicating disease. In hypertrophy of the womb, diseased action is not necessarily involved, as the excess of growth may be the result only of an increased nutrition. But with subinvolution of the uterus there is more or less of diseased action present. Involution is believed to be the result of fatty degenerescence of the muscular fibres of the uterus. Whatever arrests or prevents fatty degeneration may cause subinvolution. A hypertrophied womb thus produced is pathological. This state of the uterus is frequently accompanied with chronic inflammation and ulceration. In this form of hypertrophy the sponge tent acts with peculiar benefit, exciting the absorbents to take up all superfluous deposits or tissue. The bowels must be kept in a soluble state, much depending upon their condition in the treatment of most uterine diseases. Intra-uterine fibroid and polypoid tumours, when of small size, will sometimes be completely destroyed by the sponge tent in a few days, as stated by Dr. Sims in his work on uterine surgery. If the fibroid be small and intramural, it may be reduced in size, and possibly, in some instances, be removed completely by the long-continued use of the sponge tent, resting the patient three or four days in every week. Polypoids, when attached to the canal of the cervix, if of small size, yield readily to the pressure of the sponge tent. I have never used the sponge tent to remove a large sized polypus, for, unless the polyp be very small, I always resort to the scissors or the écraseur. I have frequently seen the enlarged glands of Naboth yield readily to the sponge tent; and I remember but one case that made any resistance to it, and that was finally cured by the use of the sponge.

I have alluded to the fact that the sponge tent is considered indispensable, as a means of diagnosis, and many uterine affections without its aid

would remain in doubt and obscurity. With it the interior of the womb can at present be explored with as much certainty as the vagina could have been forty-five years ago. We can now determine, by the use of the tent, whether the cavity either of the cervix or body of the uterus contains a polypoid or a fibroid; whether the tumour be large or small, hard or soft, sessile or pedunculated, and by sufficiently dilating the uterine cavity tumours can be removed with ease and safety. It is a blessing to woman that the days of Gooch's canula have entirely gone by.

By means of the sponge tent tumours in the walls, and even on the exterior of the womb, can be traced out with almost absolute certainty. With the forefinger of the right hand in the cavity of the uterus, and the forefinger of the left in the rectum, or the left hand placed upon the abdomen with firm pressure, but little of importance can escape the touch of the practised gynæcologist.

The compressed sponge may be resorted to with confidence as a means of successful treatment in constrictions of the vagina, whether congenital or resulting from vaginitis, or other causes. The sponge should be well compressed; having been first shaped, while wet, with reference to the peculiar condition or contracted state of the vagina, and introduced as dry as possible. Smearing the outside of the sponge freely with simple cerate, after the cerate has been melted by a gentle heat, will insure an easy insertion. The sponge soon becomes moist by absorbing the secretions, and the walls of the vagina are put gradually upon the stretch. It is well not to use too large a sponge in the beginning, in order to avoid irritation of the mucous membrane. The softest and finest sponge should always be selected for this purpose. The sponge may be medicated before being compressed; but I have found it sufficient to inject into the vagina with the hips elevated a drachm or two of Price's glycerine, containing three or four drops of carbolic acid, before the introduction of the sponge, to protect the mucous membrane from irritation. This sponge should be removed twice daily, and discontinued for a day or two if it causes much irritation. I have recently treated a contracted vagina with distressing pruritus upon this plan, with the happiest results. In abortion or premature labour, where the os is rigid, the compressed sponge acts with safety and certainty, overcoming the rigidity in a few hours.

Dr. Roberts, of New York, was one of the first to propose this method of procedure in rigidity of the os, and I have resorted to it on several occasions in premature labour, and once in early abortion, and was well pleased with its action. In indurated and hypertrophied cervix, when the os is sufficiently open to permit a constant hemorrhage or drainage, yet too hard and unyielding to allow the ovum to escape, and yet the symptoms all indicate certain abortion, the sponge cannot be too highly recommended. When desirable, from deformity of the pelvis or other proper reasons, to induce premature labour, the sponge tent may be re-

sorted to as a certain and safe means of bringing on natural labour. Puerperal hemorrhage in early abortions may be sometimes arrested most speedily with the sponge tampon.

The practice of using the tampon in a hemorrhage occurring after premature labour, or labour at full term, is extremely hazardous; for, when the womb is large, damming up the blood with a tampon in the uterine cavity may lead to bleeding the patient beyond recovery.

I will now briefly allude to the uses of the sponge in general surgery. In the treatment of stricture of the urethra the sponge tent has been highly extolled. The tent should be well compressed and then carried through a canula or catheter with the distal end open so as to lodge the tent at the exact place of narrowing. A cord should always be fastened to it to insure its withdrawal.

In cases of stone in the female bladder the sponge tent has been used with good effect in dilating the urethral canal for the purpose of extracting the foreign body, proper care being observed to prevent the tent from slipping into the bladder.

The sponge tent exerts a beneficial influence upon the semi-mucous lining membrane of sinuses and fistules; modifying, in a short time, the action of the false mucous membrane, causing healthy granulations and rapid healing of the cavities. In anal fistules, when external and incomplete, the sponge tent, as prepared for the uterus, has been used with the happiest effect. It is worthy of remark that so long as the outlet to the sinus allows a free discharge, externally, of the matter secreted the fistula never becomes double or "complete." But when the outlet becomes closed, or nearly so, the accumulated contents pressing upon the septum, between the cavity and the bowel, will cause it to ulcerate through, thus making a double fistula. Now, if the sponge tent be resorted to before the septum is ulcerated through, the contents will be freely discharged externally and the cavity healed through its entire extent, making a permanent cure.

Ulcerations and wounds were successfully treated a hundred or more years ago by the application of soft sponge to their secreting surfaces. Absorption by the sponge of the irritating and poisonous secretions, not allowing them to be taken up into the system again, explains satisfactorily the *modus operandi* of the sponge treatment in wounds, ulcerations, and abscesses. I had frequent opportunities of witnessing the good effects of this treatment during the late war.

When the meatus auditorius externus has been narrowed by infiltrations around it, the sponge tent has been recommended as being among the best and most pleasant means of dilating the canal. The same means has been advocated for opening up constrictions of the nasal cavities, and I have used it in narrowing of the cavities after the healing of wounds about the nose with happy results.

Even in hæmorrhoidal tumours the sponge tent is said to have been

effective when shaped so as to enter the bowel an inch or two, and at the same time make firm compression all around the anus externally. Vegetations on the anus and penis have been removed by the compressed sponge. Morbid growths and tumours in the soft parts, especially those seated in or above the mammæ, bony tumours and enlarged joints have all been treated successfully by the compressed sponge. I used the compressed sponge frequently with success during the late war for arresting hemorrhage, when the vessels were small and the wound so situated that it was difficult or inexpedient to ligate the artery; applying the dry sponge firmly to the wound with a bandage, and afterwards wetting it with water to produce expansion.

PHŒNIX HOTEL, April 22.

ART. IX.—*Surgical Cases.* I. *Aneurism of the External Iliac of the Left Side, both Common Iliacs, and Lower End of Aorta; Ligation of the Aorta; Death.* II. *Removal of Retained Testicle complicated with Hernia and Hydrocele; Cure.* By HUNTER MCGUIRE, M. D., Professor of Surgery in Medical College of Virginia, Richmond, Va.

I. *Aneurism of External Iliac, &c.*—W. F., negro, æt. 30 years, was admitted into Howard Grove Hospital, March 20, 1868. He states that about one week before, while pursuing his usual occupation, that of woodchopper, he felt something suddenly give way in the lower part of his abdomen. This feeling was followed by nausea and great pain, the latter continuing with increasing severity to the time of his admission into the hospital. Upon examination there was found occupying the left iliac and part of the hypogastric regions, an aneurismal tumour about the size of a goose-egg, pulsating strongly and synchronously with the action of the heart, with slight and indistinct *bruit*. No pulsation can be perceived in the left femoral artery, but the limb retains its natural size and heat. The man's general health is good. He says the tumour has been gradually increasing in size since its first appearance, and that the pain in the tumour and left lower limb is daily growing worse. He was ordered to remain in bed, at rest, and to take three times a day 20 gtts. tinct. ferri chlor., 3 grs. acet. plumb., and 10 gtts. tinct. digitalis, and to allay pain and procure sleep, ½ gr. of morphia at bedtime.

March 24. Seems better; tumour smaller; pain is less, and by the aid of morphia sleeps well during the night. Pulsation in tumour still strong, and *bruit* more distinct. No apparent difference in the temperature or size of the two lower limbs. Pressure or other manipulation of the mass gives no increase of pain. The aneurism is believed to involve the left external and part of left common iliac arteries.

26*th*. Worse to-day; pain greater; tumour larger, and tender to touch, with some increase of heat about it. Ordered veratrum viride in place of digitalis; the iron and acet. lead to be continued; morphia in larger doses at bedtime.

Finding that I could now partially control the circulation through the tumour by compressing the aorta, I directed the resident physician and resident students to make compression at intervals throughout the day and following night. The abdominal muscles were to be relaxed, and compression at a point nearly opposite to the umbilicus, made, as long as the patient could well bear it; then an interval of a few minutes' rest to be allowed, and compression repeated.

27*th.* The patient was not able to bear the compression for more than a few moments at a time, and then at long intervals; and after two or three hours the pain produced was so great that it was suspended altogether. The tenderness and heat of tumor have increased; pulsation seems nearer the surface, and the mass can be indented with the finger. Some febrile disturbance of the general system also exists. There is every indication that ulceration is going on. Directed all handling of the tumour, or attempts at compression, to be discontinued, and the morphia to be given twice daily.

28*th.* Had diarrhœa last night, and looks badly to-day. The pain, heat, and tenderness have diminished. Gave small doses of tannin and opium, which checked the diarrhœa.

29*th.* Diarrhœa returned again, but was arrested by tannin. There is now great tenderness and heat in the tumour; the pain is great and constant; has high fever; all medicine, except morphia, discontinued.

30*th.* After consultation with Professors Joynes, Wellford, and Cunningham, and Drs. Fairfax, White, Janeway, and others, I determined to cut down, and, if possible, ligate the common iliac above the mass. His bowels having been emptied by an enema, at 1 P. M. chloroform was given, and an incision made through the skin from a little in front of the cartilage of the last rib downwards and forwards to the crest of the ileum, and then forward to the anterior-superior spine. The muscles and fascia, for about an inch in extent, at the upper extremity of the wound, were then divided singly and successively upon a grooved director, and the peritoneum exposed. The index finger of the left hand was then introduced between the peritoneum and fascia, and making that a guide, the muscles and fascia were divided with a probe-pointed bistoury to the full extent of the original wound through the integument. In consequence of the establishment of collateral circulation, a large number of vessels were divided which required the ligature. Hemorrhage was, to a great extent, prevented by the assistants grasping the lips of the wound as the incision was made, and the ligatures were rapidly and skilfully applied by Drs. White, Cunningham, and Janeway, for whose valuable assistance throughout the operation I am much indebted. When the peritoneum was exposed, the mass of intestines enveloped in it was pushed inwards, and the aneurism brought into view. It was found involving the external iliac of the left side, the whole of the common iliac, as well as the aorta at its bifurcation. The anterior part of the sac was very thin, especially where it joined the aorta; there it was softened and attenuated by the process of ulceration, which had set in some days before. Determining now to tie the aorta, and being unable to reach it through the incision, I enlarged the wound by cutting from the end of the twelfth rib, where I had begun the operation, forwards and upwards, along the line of the costal cartilages for about one inch and a half. Still finding it impossible to see the aorta, and to separate it completely from the structures around it, I caught the tumor lightly between my finger and thumb, intending to follow it closely

up to the point at which it joined the aorta, and then, having separated the vessel from the parts about it, to surround it with the ligature. Conscious of the softened and readily lacerable condition of the coats of the aneurism, I did this as delicately as possible; but, notwithstanding my care, the sac suddenly burst under my fingers, and a profuse discharge of blood took place. Placing my finger at once upon the aorta, about an inch above the tumour, I succeeded in completely arresting the hemorrhage, and entirely controlled it until an assistant had surrounded the vessel with a ligature, and tied it. The blood, about one pint, which had escaped from the ruptured sac, was carefully removed from the cavity of the abdomen; the lips of the wound brought together with interrupted sutures; a compress and bandage applied; some whiskey and water injected into the rectum, and the patient put into a warm bed, covered with blankets, and hot bricks placed to his feet, legs, and thighs. His pulse was now feeble and frequent, and the surface of his body cool. In a few moments after being placed in bed, the effects of the chloroform passed off, and slight reaction took place; his pulse lessened in frequency, increased in force, and his body became warm. He was left in charge of the resident physician, Dr. John N. Upshur, from whom I have obtained the followed notes:—

5 o'clock P. M. Pulse 100, and weak; complains of numbness in lower limbs. Have given once by injection and once by the mouth, 1 oz. of whiskey and 10 gtts. tinct. opii each time; has vomited twice. 6 P. M. Pulse 100, but stronger; vomited twice in last hour. Drew off with catheter one ounce of urine; disposed to sleep, but is restless from the pain and numbness of lower extremities; temperature in axilla 96°; popliteal space 89°; feet 82° Fahr. 7 P. M. Pulse 80, and stronger; temperature 95°.5 in axilla; is sleeping quietly; respiration good; lower extremities warm; skin pleasant. 9.30 P. M. Has slept for two hours; pulse over 100; temperature in axilla 96°; gave injection of whiskey, tinct. opii, and milk; respiration good; lower extremities warm; has fallen to sleep again. 10.30 P. M. Is awake, restless, and complains of pain; pulse very weak and frequent; temperature 95° in axilla; gave, per rectum, egg-nog. 12 o'clock. Has been very restless for the last hour; respiration hurried; pulse cannot be counted; temperature 96°; gave whiskey by mouth and rectum, but neither retained; sphincter ani relaxed. Died at 12.30 A. M.

Autopsy twelve hours after death.—Abdominal viscera healthy; no blood in abdomen or pelvic cavity; aneurism found to involve aorta from the origin of the inferior mesenteric artery to the bifurcation; the common iliac of right side to its division into external and internal iliacs; and the common and external iliacs of left side. The ligature was found embracing the vessel at the origin of inferior mesenteric, and included the left ureter, which was deeply imbedded in the fibro-cellular structure of the aneurismal walls. The rent in the sac was about half an inch long, and situated just over the bifurcation of the aorta.

In this case there was every indication, before the operation, of advancing ulceration of the sac, and the death of the patient was imminent and certain. It was with the hope of finding a part of the common iliac uninvolved, and not with the intention of ligating the aorta, that the operation was begun. As the disease commenced in the external iliac, and the enlargement of the tumour was from below upwards, it was thought not unlikely

that a sacculated aneurism of the external iliac had formed, and, as it increased, overlapped the common iliac. When, however, the sac was exposed, its extent and nearly ruptured condition discovered, I resolved to give him the only chance for life, and to tie the aorta. The left ureter was so deeply imbedded in the wall of the sac, that it was difficult, after death, to dissect them apart without opening the cavity of the aneurism at that point.

II. *Retained Testicle.*—C. W. B., æt. 32 years, came to me Dec. 1867. He states that he was born with the left testicle retained in the abdominal cavity. When about twenty-three years old, a hernia of the left side suddenly appeared, while he was engaged in some unusual muscular exertion. No pain attended the descent of the hernia, his attention being attracted to it by a slight sensation of weakness in the parts, and on examination he discovered a tumour occupying the inguinal canal and upper part of the scrotum. His physician returned the protrusion and applied a truss, which he wore for five or six months, but finding at the end of that time that the descent of the hernia gave him no pain, he discontinued the use of the instrument. From the time of the first appearance of the hernia until his thirtieth year, a small tumour, which his physician supposed to be a lymphatic gland, could be felt in the upper and outer end of the inguinal canal, in front of the internal ring. The hernia, consisting of a portion of the small intestine, came down into the scrotum, and lower end of the inguinal canal, and returned readily into the cavity of the abdomen, when he assumed the recumbent posture. Several times during this period he was threatened with strangulated hernia, but always succeeded in reducing the protrusion himself, by taxis, position, and the warm bath.

Some time during his thirtieth year, he believed the hernia to be increasing in size, and he applied a truss with a hard pad and strong spring, so low down that it pressed upon the external ring, upper part of the scrotum, and he thinks, upon the urethra. The truss gave him a good deal of pain, but he continued to wear it in this way for more than three months. Soon after he commenced wearing this truss, his bladder became affected, micturition was frequent and accompanied with a burning sensation about the neck of the bladder. Incontinence of urine, to a greater or less extent, came on, and his clothes were frequently wet with urine. All desire for sexual intercourse, strong enough before, ceased. A surgeon, whom he now consulted, changed the truss for one with a softer pad and lighter spring, and directed him, after reducing the hernia, to wear the pad over the internal abdominal ring. He gave him, also, bromide of potassium. Obtaining no relief from the change in the position of the truss, or from the medicine, he applied to another surgeon, who treated him, he said, for inflammation of the seminal orifices, by introducing a catheter, and injecting a solution of nit. silver. This gave him great relief, and for some time he supposed a cure had been effected, but in a few weeks the vesical trouble returned as bad as ever.

In December, 1867, he applied to me. He was in bad health and mentally greatly depressed. His face wore the expression of one who was continually suffering. When the truss was left off and the hernia permitted to come down, the pain and burning sensation about the neck of the bladder, frequent micturition and dribbling of urine would take place, and when the truss was applied and its pressure continued over the internal ring, for a

few moments, the same symptoms would occur. The only relief he could get, was by the recumbent position. Upon careful examination there was no doubt that the little swelling at the upper end of the inguinal canal, was the testis of that side, imperfectly developed, and probably with the vas deferens too short to permit it to come lower down. Pressure upon the testis, either by the truss or by the hernia, when permitted to escape from the abdominal cavity, produced the unpleasant symptoms about his bladder.

The patient was an intelligent and well-educated man, and being tolerably familiar with the anatomy of the parts, readily understood my explanation of his case. He was advised, before submitting to any operation, to endeavour to return the bowel into the abdominal cavity, and leaving the testicle in the inguinal canal, to make pressure over the internal ring with a very small pad. This failed entirely. It was impossible to get the testicle far enough away from the internal ring to apply the truss, without pressure upon the gland. I then reduced the hernia and returned the testis into the abdominal cavity and endeavoured to keep both within the internal ring by pressure. This also failed to relieve the troublesome symptoms. I then had made for him a truss with a deep cup-shaped pad, hoping to be able to retain the hernia and allow the gland to remain in the inguinal canal, but lodged in the hollow of the pad and free from pressure. This also failed to effect any good, and he urged me to remove the testis. He was aware of the danger and fatality which, in some cases, had attended the operation.

January 10, 1868. The bowel having been carefully returned into the abdominal cavity, and the testicle held between the finger and thumb of an assistant, to prevent its escape through the internal ring, chloroform was given and an incision made through the skin over the inguinal canal, from a point opposite to the external ring, to half an inch beyond and to the outer side of the internal ring. The fascia and other structures were divided upon a grooved director, and the inguinal canal laid open. The upper end of the canal was occupied by what I supposed to be a knuckle of the small intestine. I tried to return this, but it protruded again whenever the pressure was removed; I then attempted to pull it further out, but found it adherent to the sides of the internal ring. Examining it more closely I found it to be a pouch of the peritoneum containing the testicle. When it was opened about half an ounce of fluid escaped, and the testis was fully exposed. The gland was small, imperfectly formed, and, as we afterwards found, its glandular tissue presented the immature character of the organ of a child. Passing a loop of silk through the spermatic cord, close to the testis, to prevent any chance of retraction of the cord through the internal ring, I cut off the testicle, and tied two or three branches of the spermatic artery which required the ligature. The loop of silk and the ligatures were brought out at the upper angle of the wound; two or three interrupted silver wire sutures introduced, and a slight compress and bandage applied. No untoward symptom, except a slight attack of colic, from imprudence in eating, occurred, and by the twelfth day the wound closed and he was permitted to get up.

Up to this time, nearly six months, no return of the hernia has appeared; once, before the wound closed, and again, about one month after the operation, the old vesical symptoms threatened to return, but after a few hours they disappeared, and he is now, he informs me, as well as he ever was in his life.

ART. X.—*On a New Duck-bill Speculum, for Private Practice.* By J. C. NOTT, M. D., New York. (With two wood-cuts.)

THE fact that every new month brings forth a new vaginal speculum, is sufficient evidence that all the indications have not yet been fully met. I here present one more to the profession, which acts on a somewhat different principle from those in use; and although it may be modified in shape to suit the fancy of other practitioners, I feel much confidence that the principle will hold good.

This speculum—at least in my hands—has answered far better than any I have yet seen, the requirements of the *private practitioner*, who is compelled to go from house to house to examine his patients, where he cannot command trained assistants, a suitable table, a horizontal light, etc., but is obliged to take things as he happens to find them. I have for some months been working with this speculum constantly and to my entire satisfaction. Like every other new instrument, it requires a little practice to become familiar with its manipulation. The makers of this instrument are Messrs. Geo. Tiemann & Co., Chatham Street, New York, and to their ingenuity and patience am I indebted for success. I could only suggest, but it required the ingenuity of a thorough mechanic to carry out the principles I had in view.

No one who has worked much in uterine surgery, and tested fairly the lever speculum of Sims, and the various forms of valvular and cylindrical specula, can deny that the former possesses important advantages over all others. I believe I may safely say that there is scarcely anything that can be done with others, that cannot be equally well done with the instrument of Sims, while the latter has many applications peculiar to itself.

The leading advantages of Sims' speculum are briefly these: It enables us to explore the vagina more satisfactorily than any other, as it covers but a small portion of the canal, and its position is quickly changed. Where the vagina itself is diseased, or sensitive, it is greatly preferable, as it presses on but one side, and leaves the atmospheric pressure to complete the dilatation. During operations the position and direction of the instrument can be changed by the assistant, at a moment's warning, to suit the wishes of the operator. It obstructs less the view and manipulations than any other speculum heretofore used. Not putting the vagina on the stretch *longitudinally*, it allows the uterus, by slight traction with a tenaculum, to be brought near the vulva, and thereby greatly facilitates cauterizing, probing, and all cutting operations on the cervix, introduction of tents, etc. Nothing need be said about its triumph in vesico-vaginal fistula.

It would be a waste of time to enumerate the objections, now so generally admitted, which may be made against the cylindrical and common valvular specula; suffice it to say that their utility is limited to but few

conditions—that they act on principles the reverse of the instrument of Sims—they dilate the vagina simply by mechanical force—they cover the whole vagina from view—they *push the uterus away* from the operator, and are of little service beyond affording an excellent view of the os and lips of the uterus, and of allowing the easy application of caustics or other remedies to these parts. Where flexions or versions of the uterus exist, they do not even admit the introduction of a sound without unjustifiable violence, and from the length and narrowness of the channel through which we hope to manipulate, they are utterly useless in all cutting operations. The ingenious instruments of Drs. Emmet, T. Gaillard Thomas, and Bozeman, have been fully described by their respective inventors, and any fair comments upon their respective and acknowledged merits would far transcend the limits here allowed me. I would remark, in passing, that I do not think either one well suited to the wants of the *private practitioner*. To get at the cervix uteri they all require either the semi-prone position or that on the knees; they consequently require an elevated table, and a light horizontal with the table, to give a good view, all of which conditions are inconvenient in private houses. Dr. Thomas' modification of Sims' speculum requires to be held by one hand, and therefore leaves but one free. Dr. Emmet (whose operations are all performed in hospitals, private or public) frankly said to me that Sims' speculum is superior to all others, and that he rarely uses any other. His object in contriving a new instrument was not for his own convenience, but for that of others; and the profession is certainly greatly indebted to him for his success. The operation of vesico-vaginal fistula, and most other vaginal operations, can be well performed with his instrument. The instrument of Dr. Bozeman is peculiarly adapted to the operation of fistula as I understand it, and the modifications of Sims' speculum, and that of Cusco by Dr. Thomas, though excellent instruments for most purposes, are wholly inapplicable to the operation of fistula. But there are insuperable objections to the speculum of Sims in *private practice*. It requires, for the simplest manipulations, a table from two and a half to three feet high, and a horizontal light; it requires a trained assistant to manage it; and the patient must be placed in the semi-prone position, with the head lower than the hips, which is very constrained and fatiguing if long continued.

We might just as well attempt to popularize the fracture beds of Jenks or Daniels, as the speculum of Sims; and from its bulk, costliness, and liability to be broken in carrying it about, the instrument of Dr. Emmet, with all its merit, is not, I fear, destined to come into general use.

I may remark, by way of parenthesis, that the operation of vesico-vaginal fistula has long since ceased to be one of the wonders of the world. The rules for its execution are so well defined, and the operation now so simple that any one of ordinary dexterity can perform it. In this operation assistants are indispensable, and I do not see that it really requires

any more perfect instrument than that of Sims, unless in a few exceptional cases—perhaps in some very fat women. Dr. Emmet, with Sims' speculum, and a few simple instruments, performs it two or three times a week; and I have repeatedly seen him do it, as also his operation for procidentia, with the utmost dexterity and dispatch.

Like lithotomy and ovariotomy, these operations are comparatively few, and rarely fall into the hands of any but specialists. *What most practitioners want is a speculum for every-day use*—one which will enable us to explore readily the vagina and uterus—to introduce a sound—to introduce tents—to split or amputate the cervix with scissors, etc., all of which I have been doing for months past with my speculum, and with quite as much and more ease than I could with that of Sims.

In very large fat women, from the disposition of the vagina and bladder to crowd in, in front of the os uteri, my instrument (as that of Sims and all others that I have seen used) meets with difficulty; but these exceptional cases are few and far between. Dr. Bozeman claims to have overcome this difficulty in the operation for fistula, and his experience gives full weight to his assertion.

The following are the advantages I claim for the instrument I introduce to the profession:—

1. No instrument hitherto devised can be more easy to introduce.

2. It can be equally well used in the semi-prone position or on the back.

3. While elevating or depressing the perineum, its feet are so constructed as to expand the *ostium vaginæ* to any desired extent.

4. It is perfectly self-retaining, without any arrangement external to the vagina.

5. In the semi-prone position it has the same advantage of atmospheric pressure as the lever speculum of Sims, and when the patient is on the back, by elevating the hips with a cushion or pillow, you have the same advantage of atmospheric pressure.

6. I use the instrument almost entirely with the patient on the back, because the position is more comfortable; because I can do everything I wish to do with more facility; and because the light from any window is more easily commanded. The concave surface of the speculum looking upwards, catches and throws the light fully on the anterior wall of the vagina and os uteri.

7. For all ordinary manipulations, where no cutting is required, instead of a table, any common bedstead or couch will command the light sufficiently from almost any window to give a good view. Baker Brown, in his operations for vesico-vaginal fistula, while using Sims' speculum, places the patient in the lithotomy position.

8 Like Sims' speculum, mine does not stretch the vagina *longitudinally*, and therefore allows the os uteri to be drawn down with a tenaculum near to the vulva.

9. The anterior wall of the vagina being left free, more space is afforded for operations.

10. With this speculum there are few operations that cannot be easily performed without an assistant.

I have also added, in some of the instruments, a small tenaculum, two inches long, with a little chain, any link of which may be made to catch on to a knob at the heel of the instrument. With a pair of forceps the tenaculum is fastened into the anterior lip of the uterus, and then drawn out and fixed at any point we desire.

I should remark that I have not yet tried this instrument in a case of vesico-vaginal fistula, and do not think it would answer well in any but small openings. By shortening the feet of the instrument, however, they would be out of the way, and the instrument would still be self-retaining. The feet need only be long enough to curve around the rami of the pubes, and thus not press upon or stretch the bladder; with this alteration I see no reason why it should not answer well for vesico-vaginal fistula.

It may not be amiss to say a few words in favour of a simple contrivance for office use (or elsewhere), to answer the purpose of an operating table, or expensive chair. It is simply a small cot, or large camp stool, covered with strong sail-cloth, or, what is better, raw hide or stout leather, these being more durable. Have the framework made exactly like a cot; but the horizontal bars, to which the canvas is tacked, only three and a half feet long. The sacking should extend three feet from one extremity, and within six inches of the other extremity, so as to leave the bars extending six inches beyond the edge of the canvas at one end. When the canvas is tacked on, the cot should be but two feet wide, and the height about two feet eight inches. The free ends of the bars should each have three perpendicular auger-holes bored in it, into any one of which a peg of wood, four or five inches long, may be inserted. The woman is then laid on the cot on her back, with a foot resting against a peg on each side, and the nates drawn down to the edge of the canvas. She is thus placed and comfortably maintained in the lithotomy position, which is the best for nearly all manipulations. If preferred, she can equally well be placed on the side, or in the semi-prone position.

The advantages of this cot are, that it is cheap; it answers all the purposes of the most complicated and expensive operating table; it can be folded up, set aside, or taken up by a boy and carried about from place to place when needed, and is more comfortable to lie on than a table.

Directions for Using the Speculum.—The depressor being retracted, and the instrument closed, the palm of the hand is placed over the outer opening of the instrument; the end of the thumb is placed on the back of the duck-bill, and the index and middle fingers curved over the heels of the feet—the blades are all thus firmly compressed together. Pass the instrument into the vagina as *far as it will go*, the end of the duck-bill gliding

along the posterior wall of the vagina, and the curved feet well within the arch of the pubes. Then turn the button on the screw until the perineum is pushed sufficiently out of the way, and the ostium vaginæ is well opened. In women who have had children, the instrument may be slowly expanded nearly or quite to its full limits. Then, if the os uteri is not in view, push the end of depressor forward, and sweep it around to the central line to hold up the wall of vagina, and bring the os uteri in view. This is the only difficult point to the novice, but is easily overcome by a little practice. In some cases, as with Sims' speculum, a small tenaculum, hooked in the os uteri, will facilitate the view by bringing the uterus lower and changing its axis.

In fat women the same difficulty exists with this as with all other specula, in probing and in all cutting operations. I have not used this instrument with the patient on the knees, but the principle and action here would be the same as the lever of Sims; the action of the air would be the same.

Caution.—Nitrate of silver and other chemicals act on plated instruments, and when I apply them to the os uteri, I always stuff a little cotton between the uterus and instrument to protect it.

The following wood-cuts represent the instrument with the feet upwards, the attitude in which I most frequently use it.

Fig. 1. The instrument as expanded, after being introduced.
Fig. 2. The instrument closed, preparatory to introduction.

If the reader will turn the drawings upside down, he will probably form a better idea of the shape and construction of the instrument. The two feet *b*, *b* are intended to stand firmly on the rami of the pubes, while by turning the button on the screw, the duck-bill or lever recedes and carries with it the perineum.

Fig. 1 represents the instrument with the feet upwards, as it is used when the patient lies on her back.

a, the duck-bill, corresponds with the Sims' lever, and acts on the perineum in the same way.

b, *b* are the two feet, which rest on the rami of pubes, and are so shaped as to curve smoothly around the bones, and not to press on their sharp edges.

c, is the depressor (or elevator, according to the position of the patient), which may be pushed forwards or drawn backwards, and swings around from side to side, like an oar on a pivot, so as to press out of the way the anterior wall of the vagina. This is a very convenient appendage when the patient is on the back, but may be dispensed with when the instrument is used in the semi-prone position. It is easily slipped out by unscrewing the little button, *d*, on the end.

I should remark that this depressor is the only part of the instrument that is likely to give the inexperienced operator any trouble. It should not be too much curved, and when pushed forwards to its full extent, should stand in a

line with the axes of the feet of the instrument. It is malleable, easily bent, and very little practice will enable the operator to shape it properly.

FIG. 1.

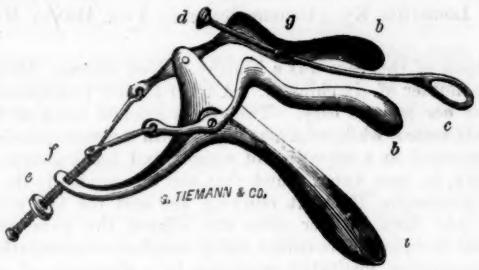
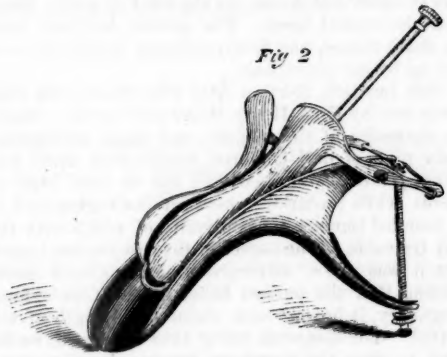


Fig 2



e, is the button which plays up and down the screw, expands or contracts all the blades simultaneously, and fixes them at any point to suit the capacity of the vagina.

f, is the screw which opens or closes the instrument.

After the operator has secured a good view of the os uteri, should he wish to draw the uterus nearer to the vulva, this is easily effected by catching the anterior lip with a tenaculum, and drawing it down, while the depressor is retracted and taken out of the way.

ART. XI.—*Case of Retroversion of the Gravid Uterus, Replaced by the Introduction of the Colpeurynter into the Rectum.* By Dr. J. GOODMAN, of Louisville, Ky. (Communicated by Prof. HENRY MILLER.)

THE subject of this case was a healthy, robust woman, thirty-two years of age, the mother of six children. All her former pregnancies had been natural and her labours easy. Two weeks prior to being seen by us, she was suddenly seized, while asleep at night, with a severe pain in the abdomen accompanied by a sensation of weight and bearing down, and upon endeavouring to pass water, found that she was unable to do so. These symptoms continuing, the next morning she sent for her usual medical attendant, who drew off her urine and allayed the pain with opiates. After several days, no improvement being manifest, a consultation was held and an examination instituted, resulting in a diagnosis of ovarian cyst prolapsed into Douglas' *cul-de-sac*, for the relief of which, tapping through the rectum was determined upon. The patient, however, being averse to an operation, delay ensued, and finally refusing positively to submit to it, she was given up by her physicians.

It was at this juncture, thirteen days after the trouble originated, that the patient was seen by Prof. Henry Miller and myself. She was suffering greatly from distension of the bladder, and upon introducing a catheter upwards of six pints of dark-coloured, ammoniacal urine was evacuated. An examination *per vaginam* discovered the os uteri high up above the symphysis pubis, while posteriorly, between the vagina and rectum, there was a large, rounded tumour, the continuity of which with the os and cervix was easily traceable. The aspect of the case, so far, impressed us with the idea that it was one of retroversion of the gravid uterus, and upon inquiry, we found that the patient believed herself to be four months advanced in pregnancy, it having been about that length of time since she last menstruated. The diagnosis being thus confirmed, we determined, in the first place, to give the organ an opportunity to resume its natural position by unloading the bowels with an aperient and keeping the bladder empty. This was persisted in for four days, when, no change having taken place, an unsuccessful attempt at reposition was made. It was now evident that more energetic measures were necessary for the patient's relief. Accordingly, on the following day she was brought under the influence of chloroform, and being placed on her back near the edge of the bed, Prof. Miller endeavoured by means of the hand, introduced into the rectum, to elevate the fundus above the brim of the pelvis; after a persistent effort, however, in which as much force was used as was deemed compatible with the integrity of the parts, sufficient, in fact, to lacerate the mucous membrane of the rectum and cause slight hemorrhage, he only succeeded in dislodging the fundus to some extent, and rendering it more movable. A medium sized colpeurynter was then introduced into the rectum and distended with air; this produced violent expulsive efforts, to allay which it was found necessary to administer an opiate, but tolerance of the foreign body being at length acquired, the patient was left in a moderately comfortable condition. Upon returning in about six hours, I was delighted to find that everything we had hoped for from the colpeurynter had been accomplished. The fundus uteri had gone up and was now easily felt above the symphysis pubis, and the os was in its normal position within easy

reach of the finger. The patient declared herself entirely relieved, and as soon as the colpeurynter was removed voided her urine without the slightest difficulty. In a few days afterwards fœtal movements became manifest, and since then (two months ago) pregnancy has progressed naturally.

The interesting features in this case are—First, the occurrence of the accident without any assignable cause, coming on as it did, while the patient was quietly asleep, having passed her water only two hours previously upon going to bed. Secondly, the serious mistake in diagnosis made by physicians of considerable experience, which came very near leading to the performance of an useless and hazardous surgical operation. And thirdly, the conjoint use of taxis and the colpeurynter *per ano;* a procedure I would strongly recommend, particularly in cases of sufficient standing for partial impaction to have taken place. The taxis being premised with a view of disengaging the fundus and slightly elevating it so as to procure a lodgment for the colpeurynter immediately beneath.

ART. XII.—*Case of Vaginismus: treated after the Method of Sims, by Exsection of the Hymen and Meatus Urinarius, etc. etc.* By JOSEPH WORSTER, M. D., of New York.

Aug. 1, 1867, was consulted in relation to Mrs. G., aged 20 years, married for eighteen months; *coitus* had during that period been impossible, owing to the excessive irritability and tenderness of the vulva, vagina, and surrounding parts.

Upon examination under anæsthesia, these parts were found to be naturally conformed. The uterus was natural, and *in situ.* The hymen admitted of great distension with the two fingers of the right hand forcibly separated; but the irritability returned as the effects of the chloroform passed away.

I deferred operating for two months, owing to the heat of the weather; but, at the end of that time no abatement whatever had occurred in the severity of the symptoms. On the 1st of October I performed the following operation: The patient being under the full influence of chloroform, assisted by W. P. Worster, M. D., and laying her on her left side, the limbs well drawn up and separated, I seized the hymen with a delicate pair of forceps, and with a small pair of very sharp curved scissors, dissected out the whole of the ring, about four lines in thickness, including the meatus urinarius. The hemorrhage was slight, and less than I had expected. The hymen was about the circumference of a five-cent piece. The loss of blood having been so slight, I determined to proceed forthwith to finish the remainder of the operation. Placing the patient on the back in the position for lithotomy, I passed the first and second fingers of the left hand into the vagina and extended them to the uttermost; I then made an incision on either side of the posterior wall, obliquely in a line from the sacro-iliac symphysis to the sphincter vaginæ, in the median line. This V-shaped double incision, of depth sufficient to divide the muscular fibre, was continued from the point of junction forward through the raphé and sphincter

of the vagina to within half an inch of the anus, thus converting the V into a Y-shaped incision. These last cuts were made with Simpson's utero-tome, as better adapted for making deep incisions in parts partly out of sight, and less liable to wound the finger. They were about one-third of an inch in depth. After arresting the hemorrhage, which was profuse, I packed the wounds and vagina with cotton saturated with glycerine, distending the orifice of the vagina to about one and three-quarter inches, and then applied a T bandage. The packing was retained for five days.

On the following day, when visited by my son Dr. W. Parker Worster, she was found with a good pulse and easier than had been expected.

On the 5th, under chloroform, the packing was removed, and a glass dilator—a cylinder two and a half inches in length and one inch and a quarter in diameter, closed and rounded at its upper extremity, its edges everted at the other, and having on its upper surface a depression to receive the urethra—was introduced. The patient rested well. On the 7*th* I removed the dilator, and after cleaning it and the parts, reintroduced it, the patient, at this latter moment, being under the influence of chloroform.

Oct. 11. Repeated this proceeding without the use of chloroform; the patient suffering very little pain.

15*th*. Removed dilator, telling patient to reinsert it every night and morning; applied nitrate of silver to expedite the cicatrization of the intra-vaginal wounds; she sat up to-day for some hours.

16*th*. Sat up all day and left in the dilator all night; 20th, went down stairs, and 24th, walked out by herself.

26*th*. Improvement continues; the wounds are nearly healed, with only the exception of a small fissure in the lower and posterior floor of the vagina, to which a weak solution of nitrate of silver is applied. Surgically speaking, the cure of the patient and cicatrization of the incisions may be said to be complete, and with little or no contraction of the vagina.

The term "vaginismus" seems to have been given to this affection—which consists in an excessive hyperæsthesia of the hymen and vulvar outlet, associated with such involuntary spasmodic contraction of the sphincter vaginæ as to prevent coition—by Dr. J. M. Simms, who, in his recent work on "Uterine Surgery," has minutely described its symptoms, and recommended for its cure the operation repeated in my case. He reports several cases of the affection and several *cures* by the operation, which, he says, is "easy, safe, and certain." On page 330 (*Uterine Surgery*) he states, "I have now operated on thirty-nine cases of vaginismus, and *in every instance with perfect success.*" To this list of successes, in a condition of things calculated to cause much suffering, both moral and physical, I am happy to be able to add my own.

The husband of my patient informs me (November) that the conjugal act is *now effected without pain or repugnance;* and this day (Aug. 12, 1868) she is reported to me as being far advanced in pregnancy, and in excellent health and spirits.

A second case has since occurred to me treated in like manner, and, so far, with similar success, as to the facility of conjugal intercourse and the speedy recovery of the patient.

120 NINTH STREET.

TRANSACTIONS OF SOCIETIES.

ART. XIII.—*Proceedings of the Clinico-Pathological Society of Washington, D. C.*

1866. *June* 2. *Puerperal Convulsions.*—The following case was reported by Dr. D. W. PRENTISS:—

Mrs. S., aged 18 years, primipara, at full term. Intense headache came on Jan. 22, which continued up to afternoon of 23d, when it culminated in a convulsion. First saw the patient at one o'clock A. M., Jan. 24, when another convulsion occurred. She was at this time perfectly unconscious; the body and limbs strongly convulsed; the bloodvessels of the head turgid; the breathing stertorous; and, in fact, the regular symptoms of an apoplectic seizure. There was no indication that labour had commenced, and no *per vaginam* examination was made. Venesection was determined on and practised to the amount of about twenty ounces; and a mixture containing one-fourth grain tartar emetic and one-eighth grain opium to each dose ordered every two hours.

Jan. 24. Saw the patient again at 9 A. M., when she was sleeping comfortably; had had no return of the convulsion; pulse 120, compressible; headache not so severe; stopped antimonial mixture and ordered sweet spirit nitre in small doses.

Was sent for in haste at 10 A. M. (one hour later) on account of return of convulsions. The attack was more severe than the one during the night; one convulsion following another in quick succession. A vaginal examination showed that labour had commenced; the os uteri dilated to the diameter of about one inch; vertex presentation, but pains feeble and irregular. Pulse 160, and seemed to be growing more frequent and weaker; respiration quick and spasmodic; convulsions rapidly became more frequent until there was no intermission between the paroxysms; the countenance dusky, purple and swollen; foam issued from the mouth, made bloody by the wounded tongue; death seemed impending from oppression of the brain. Upon consultation with Drs. M. V. B. Bogan, W. B. Butt, and Chas. H. Bowen, the membranes were ruptured with the hope of hastening the termination of the labour, and this failing, "version of the feet" was determined upon as a last resort, although there was but the slightest chance of success. Forceps were not applied because of the position of the head and on account of the convulsive movements of the patient. "Turning" was performed differently from the prescribed manner. The patient lay on her back, thighs and knees flexed, and held by assistants, who also controlled the spasmodic motions, upon which, I should mention, chloroform failed entirely to produce any effect; two other assistants held the shoulders. I prepared the *right* hand and commenced the operation. The soft parts were in a perfectly favourable condition; the "os" dilated to the diameter of one and a half inches; the head engaged in the superior strait, and the uterus firmly contracted. Dilating the "os"

occupied about half an hour before the hand could be passed into the cavity of the womb. The presentation was then carefully made out, vertex to left acetabulum, and the hand passed over the face along the anterior portion of the body until both feet were firmly grasped, and turning commenced. This, however, proved to be not so easy a matter as had been anticipated. The head refused to recede, and it was only after persistent effort, forcing up the head by external pressure, at the same time making traction upon the feet, during which one foot was lost, that I succeeded in bringing a foot through the mouth of the womb into the vagina. During this time it was necessary frequently to suspend efforts, and partially withdraw the hand on account of pressure, first, from the *os uteri*, and secondly, from the child's head against the bony boundary of the superior strait. A tape was attached to the ankle and the child shortly delivered. The placenta followed without trouble in about fifteen minutes. Child female; stillborn; weight, 10½ lbs.; duration of operation from beginning until head was born, *two hours*.

Almost instantly after the birth of the head the convulsions ceased, and the patient fell into a deep sleep. Pulse 130; respiration a little slow. It will be remembered that at the commencement of the operation the pulse was 160 and very feeble, and the respiration quick and spasmodic; a marked contrast. The patient was now put on the following treatment: Carb. ammon. gr. v, every two hours; beef essence f℥ss, every hour; inunctions of mercurial ointment twice daily; and frictions with whiskey to extremities. The binder was firmly applied, and wine of ergot left to be given in case of hemorrhage; the room was darkened, all bright hangings removed, and the most perfect rest enjoined.

5½ o'clock P. M. Pulse 140, weak; some hemorrhage; has not been awake since operation. 9 o'clock P. M. Pulse 112, stronger; less hemorrhage; feels weak, with slight headache; mind dull, but otherwise comfortable.

25*th*. 9 o'clock A. M. Pulse 100, improving; respirations 16 per minute; slept well during night; mind restored to its usual activity; lochial discharge more natural. Treatment continued. 1 o'clock P. M. Pulse 130, weaker; breathing normal; large œdematous swelling of labia minora; tongue sore and swollen from having been bitten during convulsions; no urine passed since operation. Consultation with Dr. M. V. B. Bogan. Oil of sweet almonds ordered for tongue. Two pints of urine drawn off by catheter. 8 o'clock P. M. Pulse 112; breathing natural; treatment continued.

26*th*. 9 o'clock A. M. Pulse 108, good; respiration normal; no urine voided; headache through the temples. Treatment continued. Also blister to back of neck; mustard to calves of legs, and hair cut short. 1 o'clock P. M. Pulse 136, feeble; considerable headache; one pint and a half of very dark coloured urine drawn off by catheter; after-pains with discharge of blood clots. Treatment continued; also sweet spirit nitre and spirit mindereri ordered, and cream for nourishment. 8 o'clock P. M. Pulse and respiration the same; skin hot and feverish; headache the same; lochia scanty with blood clots. Treatment continued.

27*th*. 9 o'clock A. M. Pulse 120, of better character; skin moist and comfortable; voice stronger; expression of countenance better. During the night had nine passages from the bowels, first two natural, the others thin and greenish from abundant secretion of bile, the probable effect of the mercurial ointment. Fever mixture stopped. Starch water and

laudanum enema ordered. 1 o'clock P. M. Pulse 116; consultation with Dr. Bogan; mercurial inunctions discontinued; patient begins to take nourishment. 10 o'clock P. M. Pulse 120; urine passes freely, is dark coloured and loaded with mucus; slight headache.

28*th*. 12 o'clock M. Pulse 112; urine still dark coloured and loaded with mucus. Fever mixture every three hours. 8 o'clock P. M. Pulse 108; headache disappeared; treatment continued, chicken broth ordered.

29*th*. 1 o'clock P. M. Pulse 100, good; stop fever mixture, reduce carb. ammon. to three times a day. Chicken broth, one pint in twenty-four hours.

30*th*. 1 o'clock P. M. Pulse 104, rather feeble; patient had four passages from bowels during night. Continued treatment, and add ℥j offic. sol. of morphia.

31*st*. 1 o'clock P. M. Pulse 104, stronger; wandering pains in bowels. Continued treatment; mustard poultice over abdomen.

Feb. 1. Slightly salivated; tongue quite sore and swollen, so much so that only liquids can be swallowed, more, however, from the laceration received during the convulsions than from the effects of mercury.

From this time forward she continued to improve steadily, the condition of the mouth being the only troublesome symptom, until Feb. 12, when she was able to sit up a considerable portion of the day, and attendance was discontinued.

In the above reported case, the exciting cause of the attack was without doubt the reflex irritation from the pressure of the head upon the os uteri during dilatation, as indicated by the *sudden* subsidence of all symptoms upon the completion of the labour.

In the treatment it is of interest to notice that chloroform by inhalation produced no good effect whatever, although it was given a fair trial.

"Version" was resorted to as a forlorn hope, and the result shows in what desperate cases a favourable termination may sometimes be brought about. The condition was most unfavourable for performing the operation, the membranes had been ruptured, the head was engaged in the superior strait, and the uterus was firmly contracted around the body of the fœtus. On this point Ramsbotham says, "Neither is the operation of turning under convulsions free from objections. It would be most unwise to attempt its performance if the head were engaged in the brim of the pelvis, if the membranes had been ruptured for any length of time, and the uterus were strongly contracted around the child's body; because of the difficulty we must encounter and the danger we must necessarily incur." Just the condition above described, yet what else could be done? The convulsed condition of the patient was constant, only remitting slightly at intervals; the pulse was almost imperceptible; the respiration was irregular and jerky, and we looked for each moment to terminate life.

1867. *January* 7. *Neuralgia followed by Paralysis of Motion.*—Dr. H. P. MIDDLETON read the following report of a case:—

On the 7th of May, 1865, I was called upon by Mr. R., of this city, to attend his wife. He informed me that labour pains had already commenced three or four hours before; that the patient was thirty years of age, then some three weeks over her time, and that she had been pregnant but once before, when she had miscarried at the third or fourth

month. The physician who attended her on that occasion—in the North—pronounced her pelvis *small*. Mr. R. had called upon me in consequence of the physician who had been engaged to attend her being absent from town. This latter gentleman, however, arrived at the house before me, and I consequently left the case in his hands. Three weeks later—June 5th, 1865—I was again requested to call and see Mrs. R., and received the following brief history of the case since my last visit. Mrs. R. had been delivered with forceps. In making traction, the accoucheur bent the instrument to such a degree as to be obliged to send for another pair to complete the delivery. The child was born dead, and the mother had been sick ever since with what the attending physician called "milk-leg." I found her pale and emaciated; nervous and agitated; skin moist and rather cool; pulse one hundred, feeble; tongue dry, but clean. She complained of a dull, subacute headache, and intense pain in the right leg and thigh, extending from the hip to the ankle-joint; a constant pain, subject, however, to exacerbations and remissions, becoming very severe every afternoon about three or four o'clock, and abating somewhat towards morning. She was suffering from one of these paroxysms when I called. Upon examination, found the limb of normal temperature; no swelling; integument and muscles rather flabby. She almost screamed with pain when gentle pressure was made on the thigh, over the position of the anterior crural and great sciatic nerves (especially the latter), or down the leg, over the posterior tibial. The leg was slightly flexed upon the thigh; it could not be extended because of the excessive pain thus occasioned, and there seemed to be a tendency towards increase of the flexion. The muscles of the thigh twitched violently from time to time, causing an increase of the pain, as did also every attempt Mrs. R. made to move the limb. The patient informed me, with regard to her late confinement, that her pains had commenced about twelve o'clock P. M., and continued to increase until about nine o'clock A. M., when they first began to abate, then ceased entirely. The attending physician then gave her a powder, in half a tumblerful of water. The pains thereupon returned, but with less severity than before; and after making a digital examination, the doctor informed her that the child was dead, and proceeded to apply the forceps. The child was a very large one. After delivery she seemed to progress very well for five or six days, at the end of which time she began to experience a constantly recurring uneasy sensation extending down the thigh. For this she was ordered a liniment. The pain continued, became more severe from day to day, and soon extended from the hip to the ankle. The doctor then informed her that she was going to have a "milk-leg," and ordered her to continue the application of the liniment; to have a *teaspoonful* of Dover's powder every four hours, or as often as necessary to relieve pain and induce sound sleep; and to live upon toast, tea, etc., with a little animal broth for dinner. Her husband, knowing something of the composition of Dover's powder, only gave her one-half the quantity prescribed, and found this to occasion great nausea, and sometimes considerable emesis. The physician being informed of this fact a few days later, ordered her to take *as much* of a teaspoonful of the powder *as she could* every night, and to take a teaspoonful of pulv. jalapæ, with two teaspoonfuls of cream of tartar, in a tumbler of water, three times daily, and to discontinue the animal broth. She followed his directions in regard to diet, but took the medicines in half the quantity prescribed. In

this dose, even, she found that the cathartic produced much griping and tenesmus. Finding that, instead of improving, all her ailments seemed to be more and more aggravated, her husband concluded to seek other advice; and, having dismissed the attending physician, called upon me to attend. It is needless to say that I failed to discover any indication for a continuance of the remedies prescribed, or any symptom indicative of crural phlebitis. I rather regarded the case to be, and to have been from the first, one of neuralgia, without regard to its origin or the cause of its continuance. At all events, I concluded to give the antiperiodic powers of quinia a trial in this case, and ordered pills of valerianate of quinia, to be commenced the next morning. In addition, I prescribed a chloroform liniment, and, as the patient had become habituated to a "night-cap" of Dover's powder, and was suffering great pain, I could not, of course, wholly withhold the opiate; but suspended the powder, substituting forty drops of liq. morph. bimeconatis, at night. Also ordered strong beef-tea and milk-punch.

June 4. Although much disturbed during the night, she had enjoyed more sleep than usual. She was then taking the quinia. On the morning of the 5th, Mrs. R. informed me that she had had a paroxysm on the previous afternoon, but of a greatly mitigated character. Remedies continued as before.

6*th*. The paroxysm due yesterday afternoon was completely missed; but the cessation of the pain in the leg has been followed by an almost complete loss of hearing, and by violent ringing noises in the head, which rendered the patient almost wild. I attributed this to the quinia, but never, either before or since, saw its effects in so marked a degree. I was obliged to suspend its use for two days. During this time the paroxysms returned, but with less severity. I now was satisfied with my diagnosis, and with Mrs. R.'s condition; believing that her neuralgia was kept up in great measure, if not wholly, by her anæmic and debilitated condition. I then ordered her some pills of quinia, Vallet's mass., ext. aconit. rad., alcohol, and pulv. lupulinæ, and directed her to have beef steak, beef-tea, milk-punch, etc. Under this treatment she began to convalesce, and slowly, but steadily improved; though she had one or two very slight relapses, and at one time was attacked with a diarrhœa, which lasted ten days, in spite of all efforts to arrest it. After this, however, she continued to improve more rapidly than she had done previously; she soon ceased to have the afternoon paroxysm, and the pain disappeared from the limb, except when she moved, it being even then much less severe than formerly. She seemed to be peculiarly susceptible to the influence of aconite; in two days her pulse sank to sixty beats per minute. I then withdrew the aconite and substituted ext. belladonnæ. The other medicines were continued, and my visits to the patient diminished in frequency until I only saw her about once a week. When I called on the 28th of July, Mrs. R. informed me that all pain had been dissipated, but that she could hardly move her limb at all, and that with great effort. Not laying much stress upon her statement, I simply advised her to use gentle friction over her limb, promising to call again in a few days. At my visit on the 5th of August I regretted to find a complete paralysis of motion of the thigh and leg. There was no sensitiveness over the spine. I withdrew the belladonna and lupulin from the pills, substituting ext. nucis vomicæ, in doses of one-third grain three times daily, subsequently increased to one-half grain, and then two-thirds grain three times daily.

Under this treatment the power of motion gradually returned; the patient rapidly regained colour and weight, and, by degrees, the desire (or necessity) for the opiate was overcome, and she slept soundly without it. Her appetite was excellent, and, when I ceased attendance upon the case, her health was evidently and fully restored.

January 26. *Measles and Hooping-Cough coincident.*—Dr. D. W. PRENTISS reported the following case:—

Mary J., aged 7 years, attacked with catarrh, May 1, 1866, out of which a paroxysmal cough gradually developed until May 20th, when the characteristic hoop was first heard. From this time the paroxysms continued to increase in frequency and severity, each one ending in a prolonged, loud hoop, up to the 3d of June, when there was an accession of fever, running at the nose, and red appearance of the eyes in addition to the previous symptoms.

June 6. Was called to the patient on account of the appearance of an eruption on the face, as well as high fever and difficulty of breathing. I then learned the above history of the case. Auscultation showed congestion of the lungs.

7*th*. Eruption had extended to shoulders and chest, and next day to the extremities. In ten days from first appearance, it had entirely disappeared. The affection was distinctly measles, to the contagion of which the child had been exposed.

During this time, the original disease, hooping-cough, continued with unabated violence, the cough recurring as often as half a dozen times during the night, and each time ending with the hoop.

The congestion of lungs referred to became complicated with pneumonia, which threatened for several days to destroy the patient's life, but finally yielded to a tedious convalescence. It was not until the early part of August that she could again be pronounced well. The treatment, which was directed only to the lung disease, consisted of perfect rest, expectorants, diaphoretics, and stimulating liniments.

Dr. Prentiss noticed two points of interest connected with the above case: 1st. That we have two epidemic and contagious diseases running their course apparently independent of each other, in the same patient at the same time. 2d. That in each of these diseases there is an especial tendency to serious affections of the lungs, in fact, three-fourths or more of the deaths from either are from this cause. Hence we would naturally expect in a complication of the two, that the danger from this cause would be increased twofold, and the sequel in this instance bears out the induction. Not only was the patient's life in jeopardy for some time from inflammation of the lungs, but she has had subsequently both pleuritis and bronchitis, and is still very susceptible to lung disease.

February 16. *Strangulated Hernia of four days' standing relieved spontaneously.*—Dr. J. F. THOMPSON reported the following case:—

A man of fine physical development, about 30 years of age, was admitted to Providence Hospital, February 1st, with a large, congenital, scrotal hernia of the right side which had become strangulated. It had been down several times during his life, as large as on the present occasion, but he had always before succeeded in reducing it himself without difficulty. Three days previous to his admission, in jumping from a carriage he felt the intestine pass into the scrotum, but had been unable to

return it. That night the ordinary symptoms of strangulation came on, and vomiting continued up to the time of his being sent to hospital. Efforts were made the next day after the accident by Drs. Wm. Lee and D. R. Hagner to reduce by taxis, but without success.

First saw him, Feb. 2, at 10 o'clock, when he was in considerable distress, but not in as bad a condition as might be expected after a strangulation of so long standing. There had been no vomiting since early in the morning, but he had taken nothing to eat or drink.

The tumour was large, hard, and almost perfectly round; bowels not moved since the accident; pulse excited but quite strong. Ether was administered and taxis tried faithfully for full half an hour without success. Efforts were made also by Drs. C. M. Ford and W. B. Drinkard with same result. The propriety of an operation was discussed, and it was decided to wait for more urgent symptoms. Ice was ordered locally, and one-third of a grain of morphia to be taken every three hours. 5 o'clock P. M., continued much the same as in morning, rather more comfortable, treatment continued, and enema ordered. The enema operated about 7 o'clock, and shortly after the bowel returned into the abdomen with a gurgling sound.

Approaching the hospital the next morning about 11 o'clock, I was somewhat surprised to meet the patient returning home with a brisk walk.

The very unexpected termination of this case renders it one of great interest. The preponderance of written authority would hardly justify the postponement of the operation when strangulation had already existed three days, but there are able teachers who would have approved the delay under the circumstances.

The reasons for not operating were, that the hernia was congenital; that at the time the neck of the tumour was quite large; and that the symptoms were not very distressing. If the constriction had been very great, his condition, after three days, would certainly have been more serious; the circulation, however, was not entirely interrupted.

March 2. *Twin Pregnancy and Double Abortion, with Secondary Hemorrhage.*—Dr. J. T. YOUNG reported the following case:—

About 5 o'clock A. M., March 1st, 1865, was called to visit Mrs. S., who was represented to be in great pain, but not pregnant. Found her sitting upright in bed, suffering from severe periodical pain in the lower part of the abdomen, which was enlarged and containing a tumour evidently uterine, due, as she stated, to dropsy of two or three months' duration. Three months previously she had had an abortion of a three-months fœtus; after which the abdomen did not regain its normal condition, but, on the contrary, had gone on increasing in size until the time of this attack. Auscultation of the tumour discovered the existence of a fœtal heart, and vaginal examination revealed the os uteri dilated to an inch in diameter, and a fœtal head of six months' development pressing upon it. At 4 o'clock P. M., a living fœtus of six months was delivered. Severe hemorrhage followed, which was checked by ice, and the placenta proving to be adherent was detached in pieces. The flooding continued to recur at intervals up to the eighth day, when a very severe hemorrhage occurred, which nearly terminated the patient's life. However, by raising the pelvis, pressing upon the abdominal aorta, and the free use of ice, it was checked; but not until the patient had fainted. Forty minims of laudanum were then administered, followed by small doses of whiskey, frequently repeated, until she rallied. The amount of blood lost was so

great that it was necessary to keep the pelvis and extremities elevated to prevent syncope. Convalescence set in without further difficulty, and progressed favourably to health.

March 16. *Hypertrophied Inguinal Glands, with Varicose Lymphatics, Simulating Hernia.*—Dr. W. B. DRINKARD stated:—

The accompanying specimen was removed from a middle-aged negro man (cause of death unknown) lately brought into the dissecting-room of the National Medical College. On my attention being called to the subject, I at once corroborated the statement that had been made to me, viz., that he was the bearer of a femoral hernia; although, while making the assertion very positively, I yet admitted that the case presented some peculiarities. The hernial tumour, as I supposed, occupied nearly all the superior part of the groin, being situated rather more to its outer than its inner side (one circumstance which had excited in my mind doubts as to its hernial nature); its upper boundary slightly overlapping Poupart's ligament; obscurely ovoid in shape; about four inches in its long diameter, by three or three and a half inches in its short or vertical diameter; rather "baggy" in appearance, the skin being not tense but loose and somewhat sacculated towards the inner and inferior portion, the only spot in which there was any discoloration: here the integument was slightly paler than over the rest of the tumour. (The subject, it must be borne in mind, was a negro, of very dark hue.) To the feel, the tumour was soft, doughy, inelastic, its contents yielding readily to pressure, but returning slowly to their former position when the pressure was removed. The fingers, in their exploration of the tumour, could distinguish certain portions which were more compact and consistent than the rest, although their exact outline was not easily definable amid the soft mass in which they were situated. This I took to be an indication of the presence in the sac of omentum, another exceptional trait for femoral hernia. The slight efforts that I made to replace the contents of the sac in the abdomen were ineffectual, although there had been evidently no strangulation of the hernia, and I could easily pass my fingers under the falciform edge of the fascia lata, over which the inner border of the tumour extended. The situation of this tumour, then—its apparent connection with a patent condition of the saphenous opening, and the characteristic feeling imparted on palpation—induced me to consider it as an example of femoral hernia, despite its peculiarities antagonistic to this view, and the absence of those symptoms that might be observable during life;—a hernia, I thought, either still consisting of intestine or, more probably, constituted by a portion of omentum contained in an old and, perhaps, obliterated sac.

This opinion as to the nature of the tumour was, however, soon removed on dissection, which exposed a thickened superficial fascia, from the meshes of both of whose layers protruded the cellulo-adipose tissue of the region. On removal, the tumour presented no connection with either the crural or the inguinal ring. Its appearance was that of a mass of cellulo-adipose tissue, interspersed with lymphatic glands evidently undergoing fatty degeneration, and presenting here and there, over its dissected surface and through its substance, patches of a pale rose colour, resembling cellular tissue infiltrated with the serum of the blood, and bearing in some points a yet closer resemblance to fresh muscular tissue. Although the exact nature of this tumour has not been completely eluci-

dated by the dissection, yet the opinion which seems to me the only tenable one in the premises, is that it was formed by an hypertrophy and fatty degeneration of the inguinal glands, with, probably, a varicose condition of the lymphatics immediately connected with them. This condition of the lymphatic vessels, though rare, has yet been observed by several surgeons and pathologists; instances of it are adduced by Breschet, Cruveilhier, A. Cooper, Sœmmering, Amussat, Demarquay, Andral, and Nélaton. In one case Amussat found a tumour of this nature occupying each inguinal region, and in which the development of the inguinal lymphatics had extended to the glands, with the effect, apparently, of transforming these latter into a congeries of vessels. During life the patient had worn a bandage, these tumours having been mistaken for a case of double hernia.[1] But none of the works to which I have had access, and which treat of the subject, give any precise indications for the diagnosis of the tumours thus formed, nor describe their pathological anatomy. I have, however, met with a case belonging to this class. The following extracts from the notes which, fortunately, I made at the time of seeing it will serve to point out the decided similarities between it and the case just presented. (I am not aware that this case has ever been in print; otherwise I would content myself with a simple reference to it.) The patient was in the service of M. Nélaton (Hôpital des Cliniques, Paris) in 1863—a young man of 26; good muscular development and apparently perfect health. For a long time a tumour existed in the left groin, which the patient knew to be the testicle. Latterly, another tumour has been added to the one already existing in this region. The tumour, as now constituted, is situated upon the outer two-thirds of Poupart's ligament, and invested by sound integument. The testicle can be distinguished as a mass harder than the rest. In his clinical remarks on the case M. Nélaton said:—

"The first idea given by the tumour is that it is formed by the testicle, which has become deviated in front of the abdominal aponeurosis, and that a hernia has followed the testicle—an omental hernia which would give to the tumour the peculiar sensation experienced on palpation. However, there is some difficulty in accepting the explanation. . . . . Moreover, with regard to the idea of an omental hernia, there is no pedicle traversing the inguinal canal; the idea, then, is done away with. . . . . I have thought, also, that this was probably an example of an excessively rare tumour—of which I have seen only three cases: tumour formed in the inguinal region by the abnormal development of the inguinal glands. I can recall a case similar to this one: that of a young man who was the bearer of an exactly analogous tumour in the groin."

M. Nélaton distinguishes these tumours formed by glandular hypertrophy from those varicose lymphatics which, on incision, exude a limpid lymph; the tumours in question giving issue to a milky or rose-coloured lymph. In the specimen that I have presented, I think that there is a coexistence of the two conditions. No operation was undertaken upon the tumour described above. I have among my notes the records of another case—observed in the wards of the same surgeon—in which there was not simply hypertrophy of the lymphatic glands, but also a *melanic degeneration*, occupying both inguinal regions, and descending into the pelvis. The external characters of the tumours thus formed were much the same as those of the case just described. The course of the lymphatic vessels

[1] Breschet. "Le Système lymphatique considéré dans les Rapports anatomique, physiologique et pathologique." p. 260.

of the limb, leading to the tumour, however, was marked by bluish-black lines, which gave to the limb a marbled aspect. There had been besides a manifestation of general accidents, nausea, vomiting, and defective digestion. Of course, I recalled this case simply as an instance of glandular tumours in this region, not as a parallel to the specimen that I present. (It is a singular coincidence, I may remark in leaving these cases, that in all the instances of this kind in which I have found the precise location of the tumour designated, it was in the *left* inguinal region. In the woman who presented melanic degeneration of the inguinal glands, the affection also commenced on the *left* side.)

The situation and peculiar "feel" of the tumours in the two first-mentioned cases; their likeness to hernial tumours; with the exudation, on incision, of a rose-coloured liquid in the second case, present analogies with this case of mine that cannot be overlooked. At the same time, in the absence of a mercurial injection, or of a more minute examination of the tissues than I was able to give them at the time of removal, the diagnosis even now is of course somewhat hypothetical. The point of *practical* interest in this case is the diagnosis of the tumour from a hernia. While the *post-mortem* error is evidently of easy commission, yet I think that, during life, the absence of any impulse on coughing or straining, the invariable size of the tumour, and the history of the case, would suffice (particularly if the surgeon were on his guard, and forewarned of this occasional complication) to prevent the occurrence of a mistake that might lead to fatal operative procedures in case of the supervention of symptoms denoting strangulation.

March 30. *Cerebral Congestion Successfully Treated by Venesection.*—Dr. A. F. A. King reported the two following cases:—

CASE. I. On the 16th June, 1865, Mr. J. P., aged 25, a clerk in one of the Departments, had taken an unusual amount of exercise by walking in a bright sun during the heat of the day, without any shade or protection from the solar rays. During the latter part of the day he was attacked with slight headache, which continued through the night, preventing sleep, and which became greatly increased in intensity about 2 A. M. on the following morning, and from that time continued unabated until 3 P. M. of June 17, when I visited him, being about twenty-four hours after the first pain was experienced.

At that time his condition was as follows: Headache intense; skin hot, though not excessively so; pulse full and hard, and but little increased in frequency. His bowels were constipated; tongue coated with a white fur, and he had vomited, though the stomach was now quiet. Very restless on account of the intense headache. Slight intolerance of light and sound, though of these the patient did not complain until questioned in regard to them, his whole attention being engrossed by the cephalalgic pain. Upon examination of the eye, the right pupil was found widely dilated and insensible to light; the left one natural. Sensation, intelligence, and motion, *un*disturbed.

The patient was now placed in a sitting posture, and a full half-pint of blood taken from the arm. Being rather timid of bloodletting, the bleeding was for a moment arrested, until its effects could be ascertained. Pulse became softer, but by no means weak; as yet there was no perceptible pallor, nausea, or faintness. The patient, on shaking his head, pronounced it already decidedly better. Pressure was then removed and

the bleeding continued; but a few additional ounces of blood had escaped before the patient suddenly fainted, but with proper means rallied in a few minutes. ℞.—Hydrg. chlor. mit. gr. v, pulv. jalapæ gr. xv, extr. colocynth. gr. v.—M. Take at once.

18*th*. Eighteen hours after bleeding. Pulse natural. No return of headache since venesection, immediately after which it was entirely and *permanently* relieved. The purgative operated freely and the patient had slept. The pupil of right eye still dilated and immovable.

19*th*. No further medication necessary. Appetite good. Resumed his business.

In commenting on this case, I have only to remark that the excruciating headache was almost instantaneously relieved by bleeding, and did not in any degree return. While the disease was thus apparently cut short by the bleeding, it may be a question of no little gravity and practical interest, to consider what might have been the result in case venesection had been omitted.

In explanation of the dilated pupil which remained after the cerebral symptoms had been removed, and was not at all influenced by them, it was found that the eye was affected with mydriasis, for which, by the by, a course of treatment, principally by the application of extract of Calabar bean, had been employed without benefit. Up to the present time (July, 1868) the mydriasis remains, changing occasionally from one eye to the other.

CASE II. J. B., mechanic, aged 25, a strong, thick-necked muscular man. He has generally been healthy, with the exception of constipation, which has inconvenienced him more or less for the last five years.

February 2. Felt slightly unwell, but continued work until 4 P. M., when he ate heartily for dinner of pork and beans—his usual diet. In the act of chopping wood after dinner, he was taken with "a weakness," and fell to the ground. On being carried to the house, he was attacked with violent vomiting, which continued incessantly (the simplest diluents being immediately rejected), and he suffered from intense headache. Visited him at 7 P. M. In addition to the above symptoms, his tongue was coated, pulse 80 and tolerably full, but not hard. No heat of skin or flushing of face. Eyes natural. Bowels constipated. Motion, sensation, and intelligence unimpaired. Sinapisms were applied to the leg, calves, and epigastrium, by which the pain seemed to be temporarily mitigated, but it was at no time entirely relieved. ℞.—Pil. hydrag. gr. x, resinæ podophyllin gr. ss.—M. Take at once. Ordered rest and quiet, with cold water and ice when desired.

3*d*. Did not see him till 3 P. M., when I was sent for, as the patient was worse. There had been no alvine evacuation, and the vomiting, though it had once moderated, was now as violent as at first. Headache intense; the patient rolling about the bed and groaning with agony. An enema of soapsuds, castor oil, and spts. terebinthinæ was administered, and produced a plentiful discharge in a few minutes. His pulse was now 78, and full as before. Respirations silent and slow, with an occasional deep-drawn sigh. Ordered full dose of magnes. sulph. Cold constantly to head and hot foot-bath containing mustard and capsicum.

4*th*. No alvine operation, though the salts were retained for some time after being taken. Headache intense, and he is again vomiting. Pupils natural, but the upper lids droop, and light is unpleasant. The skin is cool, and, what is remarkable, the pulse from being 78, now numbers but

40 per minute—it is full and slow, but not tense. Respiration also very slow, with an occasional deep sigh. ℞.—Hydrg. chlor. mit. gr. x, resinæ podophyllin gr. j. To be taken immediately, and followed in four hours by ℥jss castor oil. 3. P. M. Symptoms unchanged. No operation, though the medicine, including the oil, has been retained some hours. I now determined to try the effect of bloodletting, resolved, however, to proceed more cautiously than in the previous case. Accordingly, the patient sitting, a small opening was made in the vein, and not more than ℥iv of blood had been taken before the pulse rose to 50, and the patient expressed himself as being in some measure relieved of the headache. Vomiting now came on and the bleeding was stopped. As he lay down, a rumbling was heard in the bowels, and there was an immediate desire to have an operation, though this soon subsided without the wished-for result. The castor oil, previously taken, was now rejected. ℞.—Ol. tiglii ♏j, ol. caryophylli ♏j, mica panis q. s. ft. pil. j. To be taken immediately. To repeat pediluvia of mustard, and place blister to nape of neck.

5th. Patient up and received me at the door. The croton oil pill was rejected after remaining in the stomach two hours. He has, however, had three free operations; pulse 72. Headache gone, though there remains a feeling of soreness within the cranium. Countenance cheerful, but the upper lids are drooping; tongue clean and moist; respirations have regained their frequency. Advised rest, abstinence from stimulating food and drink, together with suitable measures to overcome the chronic constipation to which the patient had been subject.

On the following day, at 1 P. M., I was again sent for. Contrary to orders, the man had gone to work and eaten heartily of beef-steak and potatoes. After this the headache began to return, and the patient had walked to the druggist and obtained another of the croton oil pills, which he immediately took. Upon my arrival the pill had already operated freely; the headache, however, was still extremely violent, the patient rolling about in bed suffering painfully. He described it as a deep-seated pain, occupying the whole of the interior of the cranium. The vomiting was incessant, and there were annoying eructations of wind, and a greenish watery liquid. The pulse had again become *in*frequent, and in a marked degree, irregular, counting, during four successive half-minutes, respectively, 39, 27, 37 and 29, being from 60 to 66 for the whole minute. Respiratory acts almost imperceptible to the eye and ear, with occasional deep sighs; slight photophobia, and sounds are annoying to a limited extent; countenance languid, and the veins of the forehead are distended and easily recognizable at some distance from the patient. As the symptoms thus presented themselves—the headache, vomiting, turgescence of the superficial veins, together with the oppressed respiration and circulation, all indicating oppression of the encephalon—and as no benefit had been obtained by the free purgation of the last croton oil pill, the question of bleeding again presented itself. At this point, in calling to mind the manner in which venesection has lately been decried by high professional authority, I felt by no means confident that venesection was a legitimate remedy in the case before me; at the same time I felt assured that if the head pain depended upon the plethora of the encephalic vessels, bloodletting would as surely be followed by relief, as it was on the two previous occasions already referred to. To ascertain this point, I resolved upon the following experiment: A bandage was applied tight around each arm near the axilla, and one in like manner round the upper part of each

thigh. Blood was thus made to collect in the extremities, and the whole amount circulating through the cranium was as effectually diminished as if a portion had been extracted by vensection. To my satisfaction the pain was ameliorated by the ligatures. After the limbs had been tied a few minutes, the patient remarked that he "*thought*" he was better, and in a minute or two more became "*pretty sure*" of it, though the pain was still bad. At any rate, it was noticed that after the bandages were applied, the patient stopped rolling about, and became more quiet and contented; and when they were loosened, which was purposely done, as suddenly as possible, he at once turned over, and *of his own accord* cried out with a profane exclamation, that the pain had returned with its former severity. After a lapse of a few minutes he assured me of his *certainty* that the headache had been mitigated by the ligatures. I considered this, therefore, an indication to draw blood, and accordingly a small bleeding of ℥vj was performed. The patient immediately became more quiet, and confessed himself partly relieved of the pain. The pulse, though somewhat increased in frequency, still performed its beats with considerable reluctance. It was now ordered to shave the head and apply a blister to the scalp. Also bromide of potassium in ℈j doses every three hours.[1] Sinapisms to the feet and legs.

At this interesting period of the case the patient was removed to his own home, in a distant part of the city, where he was attended by a physician in the neighbourhood, and I lost sight of him. I have since learned the attack lasted about a week after his departure, and that he finally recovered and is now enjoying good health. It is gratifying to know the patient got well at *last*, and we cannot but suppose he would have done so *at first* if a full bleeding had been performed, as it had been, and with such a good result, in case number one.

June 1. *Mitral Disease of the Heart, with Autopsy.*—Dr. J. FORD THOMPSON presented a heart with calcareous deposit in and around the mitral valves, and the following report of the autopsy:—

On the 23d of April, at the request of Dr. Thos. Miller, I made an autopsy on the body of a man who had died the day before. Disease of the heart had been diagnosed, and the chest was first opened. The pericardium was greatly distended, and occupied a much larger space anteriorly than natural. I noticed at the same time that the right pleural cavity was filled with serum containing pus; there was a smaller quantity in the left pleura. On opening the pericardium about eight ounces of serum escaped. The heart was much enlarged, more from dilatation than from hypertrophy. It weighed one pound and two drachms. The serous membrane was not inflamed, and no lymph was found in it. The auricles and ventricles were much dilated, particularly the left auricle, which was large enough to hold six or eight ounces of the fluid. The muscular tissue of the organ did not seem to be hypertrophied, but there was general enlargement with dilatation. The valves were all found healthy except the mitral, in and around which there was an extensive deposit of calcareous matter, which extended nearly around the fibrous ring, so that it was impossible to close the orifice.

The fluid in the right pleural cavity measured about half a gallon; it was milky in appearance, and contained flakes of lymph. The left cavity contained about a pint of the same fluid. The lower lobe of the right lung

[1] In conformity with Dr. Hammond's views, that this medicine lessens the amount of blood circulating within the cranium.

was hepatized, as was the lower lobe of the left lung. The superior lobes were healthy. The examination was not extended further.

This man was about 27 years of age, and had had several attacks of acute rheumatism during his minority. The date of these attacks I could not ascertain. He was first seen in this city by Dr. J. W. Bulkley about six weeks before death. He complained of shortness of breath, and pains about the præcordia. The chest was carefully examined by the doctor, and the diagnosis made was pericarditis with effusion. Three days later Dr. D. R. Hagner saw the patient in consultation, and he agreed with Dr. Bulkley that there was effusion in the pericardium. The sounds of the heart were so confused and indistinct that they were unable to form an opinion in regard to the condition of the valves. About two weeks later Dr. Miller was called in consultation who confirmed the diagnosis, and also expressed the opinion that there was mitral disease. Neither Drs. Bulkley or Miller, who were at the examination, seemed to expect that effusion would be found in the pleural cavity.

Dr. Hagner afterwards informed me that he had detected fluid in both pleural cavities a few days before death, and was of opinion that the effusion was quite recent. It is remarkable that there was no anasarca in this case when we consider the extent and duration of the disease. The treatment was conducted on general principles.

Poisoning by Castor Oil Beans.—After the discussion on the above case was closed, Dr. Wm. Lee reported a case, under his observation, of a child who had swallowed several castor oil beans, and catharsis and emesis resulted to such an extent, that the term *poisoning* might not inappropriately be applied. Under stimulant treatment the child recovered.

REVIEWS.

ART. XIV.—*Pulmonary Phthisis.*

1. *Felix Von Niemeyer's Clinical Lectures on Pulmonary Phthisis.* Translated by J. L. PARKE. pp. 116. 12mo. Moorhead, Simpson & Bond, New York, 1868.
2. *On the True First Stage of Consumption.* By HORACE DOBELL, M. D. pp. 75. 12mo. John Churchill & Sons, London, 1867.
3. *On the Nature, Cause, and Treatment of Tuberculosis.* By HORACE DOBELL, M. D. pp. 84. 12mo. J. Churchill & Sons, London, 1866.
4. *On the Use of Perchloride of Iron and other Chalybeate Salts in the Treatment of Consumption.* By JAMES JONES, M. D. pp. 109. 12mo. John Churchill, London, 1862.
5. *On Consumption and its Treatment by the Hypophosphites.* By JOHN C. THOROWGOOD, M. D. 8vo. pp. 47. John Churchill & Sons, London, 1868.
6. *On the Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine.* By J. HENRY BENNET, M. D. 8vo. pp. 56. John Churchill & Sons, London, 1866.
7. *Egypt and the Nile, considered as a Winter Resort for Pulmonary and other Invalids.* By JOHN PATTERSON, M. D., L. R. C. S. 12mo. pp 84. John Churchill & Sons, London, 1867.
8. *Change of Air, considered with regard to Atmospheric Pressure and its Electric and Magnetic Concomitants, in the Treatment of Consumption and Chronic Disease.* By J. C. ATKINSON, M. D. pp. 142. 12mo. Trübner & Co., London, 1867.
9. *Phthisis and the Stethoscope; or, the Physical Signs of Consumption.* By RICHARD PAYNE COTTON, M. D. pp. 104. 12mo. John Churchill & Sons, London, 1868.

THERE is no disease, perhaps, which is so full of interest to medical investigators as phthisis, and this is true in reference as well to its pathology as to its therapeutics. Of the books which head this paper, that of Dr. Niemeyer treats especially of the pathology of the disease; while the other authors, with the exception of Dr. Cotton, have occupied themselves more particularly with its therapeutics and with the influence that climate has upon it. As the views which Niemeyer publishes in his book may be new to many of our readers, a short abstract of them may not be out of place. To some extent these opinions have been anticipated by recent publications of Virchow, and they therefore cannot be looked upon as entirely original with Niemeyer.

Niemeyer begins his book by regretting that clinical medicine has not kept pace with the advance made by pathological anatomy during the past few years. This he ascribes in part to the impression left upon the medical mind by Laennec, by whom all cases of consumption were referred to the deposit of a new product called tubercle (une espèce de production accidentelle), and to the subsequent changes which this product underwent. It is now known, he says, that many of the lesions

which are generally attributed to tubercle are really the consequence of pneumonia, either acute or chronic, or of a bronchial hemorrhage: and no form of pneumonia is so likely to be followed by phthisis as that characterized by the excessive production of cells, and called by Niemeyer catarrhal pneumonia, to distinguish it from the ordinary, or, as he calls it, croupal pneumonia. Although phthisis generally takes its origin from the former form, it occasionally arises from the latter, and it is important to bear this in mind. The product of the inflammation undergoes what is known as the caseous degeneration, and hence gives rise to the caseous masses in the lungs which are generally mistaken for softened tubercule. Virchow has proved, however, that these caseous masses are sometimes entirely independent of a previous pneumonia, and are really either degenerated cancerous nodules or lymphatic glands swollen by a hyperplasia of cells. As a consequence of his investigations of phthisical lungs, Dr. Niemeyer makes the startling announcement that frequently in the lungs of those who have been pronounced phthisical, not a single tubercle is to be found. The disease of the lungs characterized by this caseous degeneration is called by him phthisis, to distinguish it from that in which a deposit takes place, and which he calls tuberculosis. But while he asserts that phthisis may and frequently does run its course without the development of tubercle, it is nevertheless true that the former predisposes to the latter, not as taught by Buhl through an infection of the blood, but probably—as it is generally in the neighbourhood of the caseous masses that the deposit is found—through the agency of the lymphatics; and in conclusion he says there is no worse evil that can happen to a phthisical patient than to become tubercular. It may generally be surmised that a phthisical patient is becoming tubercular, whenever an increase of fever, dyspnœa, and other symptoms take place without a commensurate increase in the gravity of the physical signs occurring at the same time. The caseous masses he thinks give rise to cavities in consequence of the pressure made by the large number of cells upon the nutrient vessels of the air sacs, in which way a process of slow mortification is brought about. Of course the length of time consolidation of the lungs may continue without this process taking place, depends very much upon the extent to which the proliferation of cells has been carried, and the amount of lung involved. In some cases, therefore, the pneumonic affection may continue without any cavities resulting; or if the proliferation of cells has been moderate, the organic part of the exudation may be absorbed, and nothing but the calcareous part left, which, by becoming encapsuled from the formation of connective tissue, may be rendered harmless; in still other cases it is possible that all the exudation may be absorbed, and nothing but dilated bronchi left as a consequence of the former disease. These bronchiectalic cavities are generally mistaken for those due to the softening of tuberculous matter, but care will generally enable us to distinguish one from the other variety. The cavities which result from the softening and elimination of the products of catarrhal pneumonia do not, our author thinks, exhibit the great indisposition to heal which is generally attributed to them.

In a few cases Dr. Niemeyer is forced to admit that tubercles are formed in lungs, in which no caseous masses are at all demonstrable, but he says that in these cases diligent search will generally show them to exist in some other parts of the body. He therefore announces the following theory: "Tuberculosis, in most cases, is a secondary disease,

arising in a manner not known to us through the influence of caseous morbid products on the organism." For the same reason, he considers that what is generally known as intestinal phthisis, is really not tubercular, but scrofulous in character, and analogous to affections of the lymphatic glands which begin with a hyperplasia of cells and end in ulceration. The true tubercular disease of the intestines very frequently associates itself with this latter, and is distinguished by the presence of gray granulations on the peritoneal coat.

Dr. Niemeyer also controverts the opinion that tuberculosis is an inherited disease, for he says children cannot possibly inherit a disease unless one or other parent was affected with it at the time of their conception, and, moreover, he does not think it proved that even the predisposition to tuberculosis is transmitted. On the other hand, he admits that a predisposition to phthisis is often inherited, and this predisposition is frequently made known by an excessive "vulnerability," which shows itself in a great liability to take cold, and to inflammations in which there is an abnormal production of cellular elements.

In a child, in whom this vulnerability has already shown itself, or in whom there is good reason to believe that it exists, everything which is likely to give rise to a serious effect upon the constitution should be avoided, even vaccination had better be postponed, as on more than one occasion Dr. Niemeyer has seen the febrile movement to which it gives rise followed by phthisis. From this circumstance he traces the mischievous theory that vaccinia may, and often does, give rise to scrofula. In many persons, this vulnerability shows itself in their appearance, but it often exists in individuals apparently robust, and the fact that it exists in any one should outweigh any impression derived from his appearance.

Another fallacy Dr. Niemeyer believes to be the impression that phthisis never begins from a neglected cold, and this delusion he thinks liable to lead to very great errors of practice; as in consequence of it patients are very often induced to neglect treatment at a time when it can be made most effective. He thinks also that it is entirely at variance with the experience of every practising physician, by whom it is perfectly well known that phthisis frequently dates from an exposure to cold or to any cause which produces hyperæmia of the lungs, or catarrhal affections of the bronchial tubes; and this hyperæmia may be caused by immoderate exercise, direct irritation of the lungs or bronchial mucous membrane by foreign bodies, or by the coagulated blood which has remained behind in the bronchi and air-cells after a hæmoptysis.

In regard to the relation which hemorrhage bears to phthisis, Dr. Niemeyer thinks that the views at present held are incorrect. Since the days of Laennec, spitting of blood has been looked upon as a result of phthisis, but before his time, it was perfectly well known that hemorrhage might precede the outbreak of the disease. The author thinks, moreover, that it may frequently be the exciting cause of phthisis in the following way: the blood remaining in the bronchi and air-sacs gives rise to a pneumonia, the products of which undergo caseous degeneration, and Dr. Neimeyer asserts that frequently after a hemorrhage, an increased temperature and the other evidences of a fever may be noted; and that sometimes the presence of crepitation may be detected by auscultation. We learn from him that hemorrhage, 1st, may occur in those who are neither phthisical at the time, nor later became so. 2d. Hemorrhage may also be caused by the same diathesis that causes the phthisis, but stand

in no genetical relation to it. 3d. Hemorrhage may precede the development, and stand in a genetical relation to such development. 4th. Hemorrhage may be developed in the course of phthisis. 5th. Hemorrhage may hasten the fatal termination.

In speaking of the symptomatology of the two affections, Dr. Niemeyer says that phthisis may be present without its existence being made known by excessive dyspnœa, and that this is most likely to be a distressing symptom in tuberculosis. The absence of dyspnœa in phthisis is especially marked whenever the patient is at rest, or whenever the extent of lung involved is small. On the other hand, the pressure of the granulations upon the bronchial tubes makes dyspnœa a prominent symptom in tuberculosis. Pains in the breast and shoulders are rarely absent during the course of either disease, but more frequently in the tubercular than the pneumonic form. It is a matter of some importance to decide whether the cough and expectoration have preceded the emaciation and other symptoms, or whether all the symptoms have appeared simultaneously. In the former case it is most probable that we have to do with a pneumonic process, in the latter with a tubercular. A harassing cough, with a scanty expectoration, indicates a more serious disease than a cough accompanied with abundant sputa which contain a large number of cells. "For," he says, "we can boldly assert that a patient who, in connection with other symptoms of pulmonary phthisis, expectorates sputa from whose character we can infer the existence of extensive destruction of the lung, is often in less danger than a patient who is feverish, pale, and thin, and expectorates only tough, transparent sputa." It has often happened to Dr. Niemeyer, as doubtless to other physicians, to bring about marked improvement in the first class of patients; but in the second, treatment is of no avail.

Fever is, of course, present in both forms; but there is this marked difference between the two forms, as regards fever: that in the pneumonic form there is a morning remission and an evening exacerbation; while, on the other hand, in the tubercular form, the fever is continued. While, therefore, a diminution of the fever indicates a retrogression of the disease; a tendency, on the other hand, to assume the continued form, indicates that the phthisis has become complicated with the more serious disease. Emaciation, impoverishment of the blood, and other symptoms of this class, belong to both forms, and will generally be found to bear some relation to the degree and amount of febrile action.

Dr. Niemeyer says that the physical signs soonest noted are dependent upon the swelling of the bronchial mucous membrane, and the secretion into the tubes, and of course are valuable as indicating phthisis just in proportion as they are limited to one apex. It is not absolute dulness, so much as a dull tympanitic tone, that should create alarm; for the latter indicates tuberculosis. The sinking in of the infra-clavicular spaces is regarded as due to the contraction caused by the caseous degeneration, and the diminished respiratory movements are of course due to the obliteration of the air cells by the caseous masses.

Treatment is attended with most success when directed against the pneumonic form, and least so in those rare cases in which the tuberculosis is uncomplicated; but treatment should begin long before the outbreak of the disease with those persons in whom we have good reason for thinking a vulnerability exists, and Dr. Niemeyer thinks we shall be more successful in impressing upon mothers the necessity for protecting their

children from injurious influences if we are able to tell them that it is not phthisis itself which they have inherited, but simply the predisposition to it, and that the disease itself may be warded off by a due attention to the laws of hygiene. Nothing will more effectually strengthen the constitution and keep this vulnerability in check than exercise in the open air so taken that all unnecessary exposure is avoided. The liability of children in orphans' asylums to scrofula is not so much owing to the kind of food which they eat—which is generally much better than that used by the poorer classes at their own homes—as to the deficient ventilation of these establishments. When the patient is actually suffering from an outbreak of the disease, in other words, when we are fully satisfied that the catarrh has invaded the air sacs, energetic measures should at once be adopted, and we are told to confine such patients to their beds, to cover their chests with cataplasms, and even in some cases to take blood by leeches or cups from their chest, and to repeat this treatment whenever an exacerbation occurs in the course of chronic phthisis. If the treatment above recommended be unsuccessful in arresting the fever, we should then have recourse to some one of the antipyrectic remedies. Dr. Niemeyer has found particularly useful a pill composed of sulphate of quinia, gr. j; digitalis, gr. ½; and opium, gr. ¼; repeated four times daily. In regard to the diet which should be allowed to a patient with phthisis, Dr. Niemeyer says, that as his body is being consumed by the fever it is only natural that he should require a large amount of nutriment, and of this nutriment a large amount must be composed of hydro-carbonaceous materials. In this way it is that cod-liver oil, cream, and other oily substances do good. Where cod-liver oil disagrees, the extract of malt may be substituted, and in some cases the grape cure will be found useful.

There are some points in this theory of the nature of phthisis that are exceedingly unsatisfactory, and among these none are more so than the fact that we are furnished with no means, microscopic or other, of distinguishing the gray, or, at all events, the yellow granulations from the caseous masses, Dr. Niemeyer himself admitting that the microscopic appearances are the same. Nor can we regard the two diseases as so entirely distinct as he would have us believe, and it is strange that he should hold this opinion, for he not only says that caseous degeneration of the lungs predisposes to tuberculosis, but that the gray granulations—and this, we think, will not be admitted by all—are never formed in the bodies of those who do not present some evidence of caseous degeneration, either in the lungs or elsewhere. The distinction between infiltrated and miliary tuberculosis has long been made, and we are not sure that our author's view is much in advance of those previously held. Nor are we disposed to admit that phthisis is always the result of an inflammation: although admitting freely that the first outbreak of the disease may frequently be dated from the exposure to noxious influences, cases will occur to the memory of every one where no such origin can be recognized. What will be said of those cases which undeniably follow long-continued grief, or some other depressing emotion? Besides which phthisis is a disease in which there are symptoms of general derangement, and any attempt to limit it entirely to lesions of the lungs must fail. The earliest symptoms, as is well known, are not always manifestations of lung trouble. Thus, in many cases, the patients appear to suffer from dyspepsia long before attention is directed to the lungs. Dr. Walshe evidently holds this view, for he mentions it as a characteristic of phthisis that the cough generally begins without catarrh.

In regard to the difference between the signs and symptoms of the two forms of disease, much is undoubtedly due to the fact that in one case softening has taken place and that in the other it has not. From observation of some cases of acute miliary tuberculosis we can, of course, indorse the statement that dyspnœa in such cases is extreme, although on the other hand some of the most distressing cases of dyspnœa that we have witnessed have been cases of infiltrated tuberculosis. We think it highly probable that hemorrhage may occur frequently, independently of the tubercular diathesis; but in the immense majority of cases it undoubtedly shows a certain amount of *vulnerability* in the individual, even if it is not an effect of phthisis. The effused blood and the products of the pneumonia which it produces may, under certain circumstances, undergo caseous degeneration; but, if the views of the nature of phthisis that are generally held be correct, can there be a more favouring influence for the progress of the disease than the loss of a large quantity of blood? and with this depressing influence at work it is not surprising that the deposition of tubercle should take place in the immediate neighbourhood of the seat of the hemorrhage. Even admitting, however, that phthisis is of an inflammatory origin, we cannot admit that Dr. Niemeyer's treatment is judicious. At a time when the tendency to treat all inflammatory disorders with stimulants is so prevalent, it is not likely that the proposition to leech and cup the chests of the phthisical will be received with favour. Rest, emollient applications to the chest, and the pill of opium, quinia, and digitalis are remedies, however, which find their appropriate application in phthisis.

The volume is published in a creditable form, and the translator has accomplished his part in a commendable manner. Although we have criticized freely many of the views entertained by the author, there is every evidence that the book has been carefully and conscientiously prepared, and it is one which should be read by every one who is anxious to keep himself *au courant* with the literature on this subject.

The two books of Dr. Horace Dobell, although bearing different titles, appear both of them to be written for the purpose of extolling the author's treatment of phthisis by the pancreatic emulsion of fat. It is probably well known that Dr. Dobell believes tuberculosis to be dependent upon a deficient action of the pancreas, in consequence of which too little secretion is formed to emulsify sufficient solid fat for the purposes of the economy. Dr. Dobell, therefore, proposes to supplement the action of the pancreas by introducing into the economy a certain amount of solid fat already acted upon by the pancreatic secretion of pigs. If this emulsion be administered in what is called, by Dr. Dobell, the true first stage of consumption, or, in other words, that stage which precedes the deposition of tubercle, the disease, we are told, may be arrested, and the functions of the pancreas restored. If, however, this stage be passed, the oxygen of the blood, not finding hydrocarbons enough for the purposes of heat and mechanic force in the economy, then attacks the albuminoid tissue, from which results a substance which cannot be further used, and is therefore deposited as tubercle. Cod-liver oil, the efficiency of which in phthisis Dr. Dobell cannot deny, is useful because capable, as all oils are, of being acted upon by the bile, but it cannot take the place of the solid fats. Looking upon phthisis as due to the excessive oxidation of the tissues, Dr. Dobell deprecates the administration of iron, which he says must increase this oxidation by increasing the number of oxygen

carriers. In cases in which the activity of the disease has been arrested, iron is exceedingly useful. As the pancreas is the organ at fault, any treatment must be defective which does not aim at the reëstablishment of its function. Exercise should therefore be taken, which, as is well known, stimulates all the functions, increases the appetite, and promotes the circulation of the blood. The patient should be sent in the early stages to a dry and cold climate, and bathing in or sponging with cold water should be recommended. Later, a dry and cold climate may be found too stimulating, or, according to Dr. Dobell, may promote oxidation of the tissues, and is therefore to be avoided.

We cannot accept Dr. Dobell's theory. He himself furnishes us with some facts which tend to disprove it; thus, for instance, he tells us that he has been able to discover no constant lesion of the pancreas in phthisis, and that in many cases the pancreas did not appear to be diseased at all. It is true that a disgust for fat is often felt by those who are predisposed to phthisis, but this is felt often years before the outbreak of the disease, and it by no means follows that because there is a disgust for, there is no digestion of, fat. In fevers, for example, there is often positive loathing for food, and yet patients are frequently kept alive by the large quantities which they consume. It seems to us that the feces of consumptives might be made the subject of careful investigation; we are not aware that an unusual quantity of fat has been found in them, and it is rather singular that Dr. D. has not taken the trouble to examine them.

Like Dr. Dobell, Dr. Jones believes that the treatment of phthisis should begin before the deposit of tubercles takes place, during the period of ill health which frequently precedes the more serious symptoms. It is, however, not always an easy matter to distinguish what is here called the true first stage of phthisis from several morbid conditions in which recovery is the rule. In all cases of the tubercular cachexia, Dr. Jones tells us, there is an evidence of mal-nutrition, and this mal-nutrition will be found dependent upon one of three causes: 1st, an imperfect condition of the blood; 2d, a diminution of the supply of blood; 3d, inability on the part of the blood to draw nourishment from the food. The principal alteration of the blood will be found to be a diminution in the number of red corpuscles, and the important part which these little bodies play in the organism is shown by the analogy which exists between their contents and the juices of muscles. A very important function which they also perform, is the conveyance of oxygen to the different tissues, and the importance of maintaining them in proper numbers is shown by the fact that a low degree of temperature is always obtained in any case where they are notably deficient. As a consequence of the diminished quantity of red corpuscles the metamorphosis of the tissues is deficient by reason of the small amount of oxygen conveyed to them, and to the products of this deficient metamorphosis he traces the deposition of tubercle, differing, it will be seen, widely from Dr. Dobell, who believes the deposition to be due to the over oxidation of the albuminoid tissues. With this view of the nature of phthisis it is not surprising that Dr. Jones should place great reliance on the administration of iron in all stages of the disease, and of the different preparations of iron he thinks none is so entirely satisfactory as the perchloride, which may be administered either with or without the addition of cod-liver oil, the iron making, he thinks, the oil less nauseous. Dr. Jones agrees with Dr. Niemeyer in believing that hæmoptysis frequently occurs in those who are not at the time tuber-

culous, but he thinks that it never occurs unless the walls of the blood-vessels are in a weak condition. In regard to the climate in which phthisical patients are most likely to do well, Dr. Jones says that a dry, sunny, not too warm, climate is to be preferred, one in which life in the open air is possible the greater part of every day.

In speaking of the colliquative sweats which so frequently annoy the patient, Dr. Jones traces them to the escape of the hydrocarbons by the skin from the blood. The sweat glands as well as the sebaceous glands secrete a large amount of fat, and if the sweat is excessive, this secretion of fat will be very much increased; in phthisis, moreover, the fatty matter in the blood appears to act as a stimulus to the sweat glands. If iron be now administered the quantity of oxygen in the blood will be increased, and oxidation of the fats being effected the sweating will cease. It is not easy to reconcile this opinion with that held by Dr. Dobell. In the one case the fats are asserted to be in excess, and in the other deficient.

Dr. Thorowgood's theory of the nature of phthisis, stated in as few words as possible, appears to be as follows: The nervous system is, he thinks, principally at fault, in consequence of which nutrient matters are not absorbed and properly assimilated and deposited as healthy tissue, or, on the other hand, the products of tissue waste are not converted into such bodies as can be excreted from the body by its various emunctories, and as a consequence both the badly assimilated food and the products of retrograde metamorphosis are deposited as tubercle. Dr. Thorowgood thinks, moreover, that there is an excessive oxidation of the phosphorus in the tissue. Now it is well known that phosphorus is an essential constituent of the nerves, and of the brain substance, and it is reasonable to suppose that by supplying phosphorus in an oxidizable condition its excessive oxidation in the tissue may be arrested, and the assimilative and nutritive functions restored to health. The excessive oxidation is shown by the increase of the phosphates in the urine and by the high arterialization of the blood, which Dr. Thorowgood believes to be due to an excess of the phosphates. In relation to this subject, he says: The rapid oxidation of the phosphorus of the tissues "may disintegrate these bodies in such an irregular way, and cause their elements to collect in the blood in such form as to be unfit for tissue structure and only fit for deposit as tubercle." Entertaining this view of the pathology of phthisis, it is not surprising that our author should recommend the administration of phosphorus. But it can be regarded as little more than a palliative, for surely we cannot modify a diathesis which predisposes to the excessive oxidation of phosphorus or to its mal-assimilation by the administration of that article.

Phosphorus itself, or the phosphorized oils are disagreeable remedies, and the phosphates, being already highly oxidized, would not fulfil the indication; it is, therefore, proposed to give the hypophosphites, hypophosphorous acid being composed of one equivalent of phosphorus united with one of oxygen. Of the hypophosphites Dr. Thorowgood prefers the salt of soda, but this sometimes disagrees with the stomach, and then the hypophosphate of lime, iron, or quinia may be given. In cases, however, where hemorrhage is feared the iron had better not be given.

In 158 patients, 100 of whom were in the first stage of phthisis and 58 in the second and third stages, who were treated with the hypophosphites, and of whose cases Dr. Thorowgood has notes, and which, we are led to believe, were not selected cases, the results were exceedingly favourable. Thus, of the cases in the first stage 44 were very much relieved and able

to return to their employments; 47 were relieved, and in 9 no improvement was observed. Of the 58 cases in the second and third stages, 8 were cured, 23 were much relieved, 15 were relieved, 7 were unimproved, and 5 died. This is rather a more favourable result than most of us are likely to meet with in the treatment of phthisis; but it is difficult to say how much was due to the hypophosphites, as in most of the cases, cod-liver oil was administered and other medicines were given as they seemed to be indicated. Although we should not be inclined to trust entirely to the treatment by phosphorus in phthisis, there can be no doubt that it will often be found of service. Dr. T. is inclined to think that in cases complicated with laryngitis its use will not be followed by much benefit.

The books of Drs. Bennet, Patterson, and Atkinson treat principally of the influence which climate exercises upon phthisis. Dr. Bennet was in early life threatened with this disease, and determined to try the effect of climate in arresting it. After some little experience he has been induced to recommend "the Coast Ledge, which forms the north shore of the Mediterranean from Cannes to Pisa," and he speaks of the climate as cool, sunny, bracing, stimulating, and dry. On the contrary, Dr. Patterson writes for the purpose of proving that Egypt presents many attractions for the phthisical patient. He says that his book contains "the expression of a few simple meteorological data, carefully registered by the author and a few friends, to which the necessary explanations have been added." He considers that the kind of climate likely to be beneficial to a pulmonary invalid is that characterized by "a warmer temperature, a purer, and generally, a drier air, a greater amount of solar light, and freedom from rain. In short, he (the invalid) seeks to be placed under circumstances where he is able to take regular exercise in the open air, &c. &c." The mean temperature at Cairo for four years is as follows: January, 58⅓° Fahrenheit; February, 57°; March, 65¾°; April, 70°; May, 77°; June, 81½°; July, 86°; August, 82½°; September, 82½°; October, 78°; November, 69°; December, 59°.

During these four years there was an average of fourteen showers a year, and as the weather was bright and clear, the invalid could be constantly in the open air. The average temperature is, we think, rather high in at least six months of the year, for the statistics of the French army prove, as quoted by Dr. Bennet, that soldiers suffering from phthisis get worse in warm climates, and it is well known that the extreme heat of our summer proves extremely fatal to those in the third stage of phthisis. Both Dr. Bennet and Dr. Patterson caution those who seek relief from their disease in other countries, not to live differently from their usual mode at home. The good which climate does is often undone by the excesses which are committed in foreign countries.

Dr. Bennet is a firm believer in the curability of consumption, in fact he has every reason to believe that in his own case the disease has been permanently arrested; he mentions the fact, however, that patients cured of phthisis are very apt to die of Bright's disease, and this fact, he says, has been noticed by others. Believing that consumption is a general disease, the medicinal treatment recommended by Dr. B. is addressed to the improvement of the constitutional condition. A moderate amount of exercise, free ventilation, and constant bathing, are particularly insisted upon.

Dr. Patterson thinks that patients in the first stages are more likely to be benefited by a residence at Cairo, while those in a suppurative stage are frequently injured; to the latter class of patients, Alexandria is perhaps more likely to be beneficial.

We confess that we experienced a feeling of disappointment after reading Dr. Atkinson's book. We have so long been convinced that a change of climate was often unscientifically prescribed, that we were in hope that this book would contain such data or rules as would guide us in the selection of places to which to send our consumptive patients. He begins by telling us that change of air should be prescribed as carefully and as understandingly as any article in the Materia Medica; but when he tells us that "to stay morbid action in the lungs, a moist, low, marshy situation is preferable to a high and dry," or again, when we find him recommending that hospitals should not be too well ventilated, as he has frequently known patients, brought from their homes in courts and alleys, to find the air of hospitals too stimulating, we are not particularly impressed with his fitness to judge of the applicability of this remedy to particular cases. We have seen few cases of phthisis in which there was not a temporary improvement after admission to a hospital, and the subsequent relapse is not so much due to the stimulating air of the hospital, as to the depressing moral influences with which the patient is surrounded. Nor can we regard the recommendation, that the patient should confine himself to one or two rooms which had better be hermetically sealed, as judicious. That we should hesitate before recommending a patient to quit a comfortable home for the discomforts and annoyances which he must encounter in travel is very true, but what can be worse than the kind of life to which he condemns his patients. For the purpose of giving the reader a specimen of the author's style, we quote the following :—

"Balmy breezes, saline springs of professed medicinal virtues, and in some cases evidently curative, yellow sand with sparkling waves or foam-fringed billows, beating in wrathful mood against the granite bulwarks of the beetling shore, however inspiring to the healthful, will avail little to calm the seething brain and lull the sleepless eye of the feverish invalid."

And a little farther on we are told,

"Hope waves her starry wings over the sufferer, and glowing health is seen in the distance. Alas! darkness shrouds the brilliant scene—the invalid returns—only to die."

We might copy many passages of equally fine writing, but we have quoted sufficient to show that the subject is hardly treated in that serious mood which is fitting in a medical book. Some of the statements are exceedingly absurd; for instance, he says :—

"The stethoscope is adapted for those who have an acutely sensitive auditory organ, and who on that account are very rarely blessed with the other four senses, viz., tasting, smelling, seeing, touching, or feeling in an equal degree of perfection."

And some of our readers will be startled to find that the necessity for the presence of a certain amount of carbonic acid in the atmosphere is supposed to be proved, because if the school-boy finds he cannot fall asleep, the first thing he does is to bury his head under the bedclothes.

Dr. Cotton's little book is an admirable one of the kind, the physical signs of consumption being so arranged that the student may become readily acquainted with them. To the present edition of the book is appended a chapter on the signs indicative of an arrest of, or improvement in, the pulmonary disease. Although perfectly willing to admit that Dr. Cotton has done his work well, we cannot see what useful purpose such a book answers, as all that can be learned from it is to be found in the systematic treatises on Diseases of the Chest. J. H. H.

ART. XV.—*Treatise on the Diseases of the Eye.* By STELLWAG VON CARION, M. D. Translated by CHARLES E. HACKLEY, M. D., Surgeon to the New York Eye and Ear Infirmary, etc. etc., and D. B. ST. JOHN ROOSA, M. D., Clinical Professor of the Diseases of the Eye and Ear in the University of New York, etc. Illustrated by ninety-six woodcuts and eighteen chromo-lithographs. 8vo. pp. 774. New York: William Wood & Co. 1868.

THE practice of ophthalmology, from being one of the most obscure and consequently unsatisfactory branches of medical science, has become within a short period one of the most exact in regard to diagnosis, and rational as to treatment. So great has been the revolution in regard to ocular therapeutics that the so-called "recent advances" made in this department may be now considered as constituting the greater part of the entire art of ophthalmology. Far advanced as we undoubtedly are in other departments of medical science, it appears to us that the advances lately made in this special branch have not been as freely acknowledged, or as carefully cultivated in this country as their importance would demand. Strange as it may seem, no good and complete text-book, which can lay claims to adequately representing the entire science of ophthalmology as it exists at the present day, has yet appeared in the English language.

The student in these matters, denied the advantages of a foreign education, has been compelled to gain his information where he might, but particularly from journals and ophthalmic reports. But, as a usual thing, journal reading is to medicine what magazine reading is to literature—incomplete and inconsecutive; while however useful and instructive monographs and special essays may be to an adept in a science, they are generally unintelligible and discouraging to a beginner.

It was, then, to meet the wants of the student in ophthalmology, be he a graduate or otherwise, that the work, whose title stands at the head of the present remarks, owes its appearance in English. And though no doubt could possibly be felt as to the pressing necessity of such a book, still, a good deal of surprise might be expressed at the selection of the author, for Stellwag Von Carion can hardly be called a fair representative of the art of ophthalmology as it is practised and taught by the leading men of the country to which he belongs. Still, this surprise cannot fail to be lessened, and the choice in part justified, when the fact is taken into consideration that, even in Germany, there are few good and complete text-books on the eye, and that among these there can be but little doubt that Von Carion is the most complete, as it certainly is one of the most recent.

It is the individuality of the work which constitutes its chief merit, and as the expression of the power of observation, concentration of thought, and wide extent of learning, it will probably maintain for some time a high position in this department of literature. It will, however, probably be among the last, if not the last, of even moderately successful individual attempts to cover, however incompletely, the rapidly extending field of ophthalmology; and the future productions of this kind will consist, as does the great work of Wecker, of a skilful combination of the results of the labours of special observers in the different branches of this art.

Before passing to a consideration of the book itself, we cannot help expressing our disappointment at the manner in which the present publishers have thought fit to produce the work. Surely the great and conscientious

endeavours of the author, and the perseverance of the translators, deserve a more fitting requital for their labours. In quality of paper, type, and printing, the book can bear no comparison with the original; while the numerous "woodcuts" are positively painful to any one not unnaturally wanting in sensitiveness.

The first impression which the book is calculated to make on the mind of the busy practitioner, or hard-pressed student, is rather that of dismay than pleasure, and he would be apt rather to turn away from so ponderous a volume, than to wearily plod through a work which must strike him as uselessly prolix and unduly inflated. This impression, however strong it may be at first sight, cannot fail to vanish upon even the most trivial acquaintance with the author; and it requires but little reading to convince one's self that it is rather from the accumulation of a multitude of subjects than from the undue inflation of a few, that the book owes its ponderous proportions. Having conquered his prejudices in this respect, the reader is met at the very outset of his investigations into ophthalmic science, with a rebuff of no light character, in the shape of thirty-four closely printed pages of "General Observations" on the treatment of diseases of the eye, all of which would be much more rationally treated if under special heads; and some of which are of so abstruse a nature, as, for example, "intra-ocular and intravascular pressure," as to be barely intelligible to the most advanced students in ophthalmological physiology, and which are much more suitable for an appendix than an introduction.

The curious manner in which the author has chosen to classify the subjects under consideration cannot fail to strike the least observant, and cause a feeling of wonder how any writer could even tolerate, much less approve of, an arrangement which cannot but detract in a great degree from the general merit and usefulness of the book. To begin with a consideration of the diseases of the cornea, to pass thence to those of the vitreous body, thence to the optic nerve, then to the affections of the retina, from the retina to the choroid, from the choroid back again, as it were, to the diseases of the conjunctiva, followed by those of the lid, lachrymal passages and orbit, and then to the troubles of the lens. Surely all this is as unmethodical as it is unusual, and as inconvenient as it is unscientific.

However much fault might be justly found with the general arrangement of the work, none certainly should be with that of its special sections. The habit which Stellwag has of tersely, but clearly defining the disease itself, and then passing to a brief but always systematic and forcible discussion of the symptoms, course, prognosis, and treatment, is one which cannot be too highly commended or too fully imitated; while the bibliographical list, at the end of each section, is a perfect mine of wealth to those who would wish to pursue more in detail the subjects which the author has touched upon in the text.

Section I. treats of the diseases of the cornea, and opens with the description of its anatomy, which is a condensed but on the whole pretty accurate representation of our present knowledge of the structure of this membrane. This is followed by a consideration of the effect of the inflammatory process upon corneal tissue, and it is to be regretted that the author did not give more time and space to the consideration of the general characters of keratitis, and less to that of its various modifications.

It is to the labours of Virchow, His, Arnold, and Coccius, that we owe our present exact knowledge of the cornea; and Stellwag has followed the above mentioned authorities in believing that "the inflammatory changes

patent to our observation proceed from the corneal corpuscles by proliferation of these bodies, and segmentation of their contents." It is to be hoped that this part of the book will have the careful perusal that it deserves, and that it may be influential in lessening the frequency of the use of those vague terms "exudation and infiltration" as applied to want of transparency of the cornea, which is in reality due to a change in the condition of the cells themselves. These general considerations in regard to the inflammatory changes are followed by the description in detail of the various kinds of keratitis; and amid so much which is so sound in theory and judicious in practice, one is somewhat astonished at meeting with occasional instances of what seems to be quite the reverse. We doubt very much the propriety of even omitting in ulceration of the cornea, whatever its position, the use of atropia, the soothing influence of which upon the membrane itself, and good effects in preventing the action of the ciliary muscle, have become finally established. Much less can we coincide with the author in recommending the employment of so powerful and irritating an agent as Calabar bean, for the purpose of preventing a prolapse of the iris, should a circumferential ulcer perforate. The indications for the use of atropia, the abstinence from that of washes having a metallic basis, and the necessities for the performance of paracentesis, are excellent in themselves, and if at all reasonably carried out by the practitioner, will probably be the means of saving many eyes which would otherwise be irrevocably lost.

Section IV. is devoted to the retina, and opens, as is always the case with the author, with a detailed, but at the same time very condensed description of the anatomy of the part. So much has this been the case, that this portion is but a collection of facts and citations, so numerous in quantity, and of so arid a quality, as to pass from the mind of the reader the moment the eye leaves them; the desiccating process being carried so far that one has great difficulty in recognizing even the active principles abstracted from the researches of Müller, Virchow, and Wedl.

However much we may congratulate ourselves upon the exact knowledge that we possess in regard to the normal anatomy of the retina, we certainly have but little upon which we can plume ourselves in regard to that of its pathological changes. Of the views which have been laid down by modern observers, Stellwag has followed, in most essential points, those which seem entitled to most weight; and his statements in regard to the inflammatory changes incident to this membrane are probably, as far as they go, reliable.

The general description of the characteristics and symptoms of retinal disease are well given, and exceedingly well illustrated by the ophthalmoscopic plates; so well, indeed, that we cannot but regret that in the treatment of these troubles the author shows a strong leaning, in the obscurer forms of retinitis, towards adopting the national aphorism, "When in doubt, give bichloride." Few American practitioners will be willing to accept without hesitation the advice offered for the treatment of diffuse retinitis:—

> "As a direct means, mercury is almost universally considered necessary, even without regard to a syphilitic origin." (p. 145.)

Still less would he be willing to believe that, in detachment of the retina, where the inflammatory origin of the disease is shown by diffuse cloudiness of the retina and vitreous, "mercurials may be used advan-

tageously." (p. 182.) The author is, however, decidedly averse to any operative interference in these cases, whether performed according to the manner suggested by Sichel, Bowman, or Wecker.

The chromo-lithographs illustrating the morbid changes in the retina incident to Bright's disease are exceedingly well executed, and give so vivid a picture of this affection as to render it impossible for any one, who had seen the plate, to fail in making a correct diagnosis of the disease.

Section V. is devoted to Iritis, and we cannot but regret that this chapter is not as fully written as so important a subject merits and demands. Of all eye troubles there is probably none whose occurrence is more frequent, or whose results are more disastrous than iritis, or one the treatment of which is really so little understood, or less skilfully applied. The use of strong mydriatics is certainly advised by the author; but the employment of atropia from the very commencement of the disease till long after all inflammatory symptoms have disappeared, is not, it appears to us, insisted upon with sufficient force, especially for this country, where its use is less general, or where it is even supplanted oftentimes by the inefficient extract of belladonna.

Nor can we approve of the recommendation to separate by surgical interference such posterior synechiæ as will not yield to powerful mydriatics, nor can we coincide in the opinion that the "brilliant results and entire want of danger in the operation, which has been called corelysis, are estimated highly." (p. 193.)

The fact that from the condition of the iris alone, no certain diagnosis can be made between syphilitic and non-syphilitic iritis is forcibly put (p. 185), and is based on clinical experience, together with the fact that "gummy tumours are not necessarily connected with the existence of secondary syphilis, and, on the other hand, they show nothing by which they may be distinguished from simple inflammatory products." (p. 178.) (*Virchow.*) The fact, too, that "the most inconstant symptom of iritis is pain, and that this is not unfrequently entirely absent, or so slight that it scarcely exacts the attention of the patient," is one which, though it may be a revelation to some, ought to be understood by all. In this connection it strikes us as somewhat curious that the author, although he has mentioned its occurrence, has not dwelt more on serous iritis, one of the most dangerous, because one of the most insidious, of all forms of iritis.

The indications for the performance of paracentesis corneæ in connection with iritis, and especially that of iridectomy, are judiciously chosen and clearly stated, and, if observed at all as they should be, the percentage of eyes daily lost for want of the timely performance of these operations will be immensely lessened. Though no objection could be raised as to the indications for iridectomy, still the manner in which it is directed to be done, especially as to its position, is, it appears to us, open to criticism. It is true that no precise rule can be laid down as to the exact position of the incision, as this will be influenced by the condition of the anterior chamber and state of the sclerotic, which may be so much affected as to necessitate the making of the wound, at, or just within, the corneal boundary. Still, we very much doubt the propriety under any condition whatever of making the "incision fall a little outside of the middle of the corneal curvature." (p. 197.) The result of such a proceeding, in case of faulty, or vicious cicatrization of the wound, could not be but detrimental to vision, and unsightly in appearance.

Section VI. is devoted to the choroid, and is a good example of the

great care and research which have been employed in the compilation of this wonderful book. Of so uniform a character is this section, and so little does it differ from what has previously appeared on this important subject, that there is little deserving of special comment, still less of criticism. In speaking of enucleation, however, the following sound advice is worthy of more prominent notice, and a better translation than that given to it in the three lines of very small print:—

"Recently the propriety of not undertaking the enucleation, except during marked remissions of inflammation, has been very much spoken of, for if done at other times, the operation has been seen to be of little or no use." (p. 235.)

In regard to the treatment of these choroidal affections some doubt might be entertained whether "a well-conducted mercurial inunction *is* one of the best antiphlogistic means, especially when combined with the systematic wearing of a protective bandage." (p. 234.) We should hesitate about the propriety of keeping systematically shut from our inspection an eye which may require at any moment an operation, and we can see but little indication, when the trouble has not a specific origin, for further reducing by a process of mercury, a patient whose condition is oftentimes one of extreme debility from pain and wakefulness. The necessities for, and advantages of, an iridectomy in certain conditions of choroiditis are forcibly dwelt upon.

Under the head of choroidal affections, the author also includes glaucoma; and the fact that the choroid plays so important a part, both in its development and progress, would appear to justify, to a certain extent, such a classification. But it has always appeared to us more logical to look upon glaucoma rather as a symptom than a disease, or if in reality a disease, one whose causes may be many, but whose results are always expressed by a few prominent features. Or, in other words, we incline to that view which holds that glaucoma is but the expression of the want of equilibrium, existing in health, between the capsule of the globe and its contents; the volume of the latter being disproportionately large for the capacity of the former. Therefore, changes in any membrane of the eye capable of producing such a result are capable of producing glaucoma. Thus we see glaucoma arising from a serous iritis, and even the author admits that "at times a keratitis or an iritis may lead to a glaucoma." (p. 242.)

The statement that "glaucoma is developed only on ground prepared for it," amounts to saying that glaucoma is glaucoma. Nor do we think that the author has been so happy, as is usually the case with him, in the description of the symptoms of the disease. How difficult a task he had in giving the symptoms of so vague a trouble, is well illustrated by those which he has cited:—

"These comprehend the sensible increase in the hardness of the globe, the ophthalmoscopic appearances of excavation of the optic nerve, the symptoms of hyperæmia and inflammation, as well as a great variety of disturbances of vision." (p. 236.)

There is not one of these which is a constant accompaniment of the affection. In the first place, the "sensible increase in the hardness of the globe" may be entirely wanting, a fact which the author himself has strongly asserted by saying (p. 216) that "the resistance which the globe of the eye gives to external pressure is oftentimes no greater in undoubted

glaucomatous eyes, than in those which are decidedly healthy;" while he further adds:—

"If the increase in the intra-ocular pressure ceases to be an unmistakable evidence of the existence of glaucoma, the rigidity of the capsule of the globe may be all the more one." (p. 217.)

Again, in regard to "excavation of the optic nerve." It has been proved beyond a question of doubt that we may have even several attacks of acute glaucoma without any trace of excavation; a fact which the author himself corroborates (p. 250) by observing that "occasionally cases occur where, after repeated acute attacks, the visual power spontaneously reaches a high point after a time, and no excavation can be observed."

We also very much doubt whether, as the author asserts (p. 238), the diminution in refraction, which oftentimes accompanies glaucomatous troubles, is "the result of flattening of the cornea." We have much better authority for believing it to be due to flattening of the lens. (*Donders.*)

It appears to us that, taken as a whole, this chapter is neither philosophically conceived nor clearly expressed, and gives but a very inadequate representation of this fearful disease.

The chromo-lithographs illustrating the glaucomatous ophthalmoscopic appearances are excellent, especially that showing the earlier stages of the disease. This we consider important and highly instructive, as it exhibits a condition in which iridectomy would be most productive of good.

Under the head of treatment, the necessity for an early iridectomy, as the only successful means of cure, and the kind of cases in which it should be employed are clearly laid down; while the author justly observes that "the objections which still cling to iridectomy do not remove the indications for it, but only render a guarded prognosis necessary." (p. 247.)

The guarded and careful manner in which the author speaks of the curative powers of iridectomy, and the freedom from any tendency to underrate the difficulties and dangers of the operation, are in themselves a pleasant contrast to the opinions of most of his countrymen, from whose writings it would almost appear that the iris was created for the express purpose of having one or more iridectomies bestowed upon it.

However much they might approve of the operation of iridectomy in glaucoma, few would, we think, be willing to coincide with the author's view as to the manner in which it acts, or believe with him that—

"It even seems as if the curative effect which the operative methods that are employed for glaucoma produce, is due to the fact that a large segment of the sclerotica is incised, and the wound again united by a distensible cicatrix, which may, in some degree, replace the loss of elastic distensibility." (p. 237.)

The common opinion always has been, and still is, that "a distensible cicatrix" is one of the most calamitous results which follow the performance of iridectomy, it being always detrimental to the health of the eye, and sometimes involving it in ruin.

Section VII. is devoted to diseases of the sclera, and the important subject of sclero-choroidal staphyloma is handled with care and ability.

Section VIII. is devoted to the troubles of the conjunctiva, and the mildness which characterizes the treatment of these diseases, in comparison with that usually laid down in text-books, is worthy of observation and imitation.

Sections IX., X., XI. are devoted respectively to diseases of the lids, lachrymal passages, and orbit. With the last section Part I. closes.

Part II. consists entirely of an essay, or rather compilation, upon tumours incident to the eye and its appendages, and is certainly one of the best, as it is the very dryest that we have ever encountered.

Part III. is entirely given up to the consideration of cataract, and this chapter is, on the whole, the best in the book. It is a complete monograph in itself, and treats the entire subject with a fulness and breadth not apparent in the other parts of the work. No one would, of course, be willing to indorse fully everything which it contains; still, few would be unwilling to admit that it gives a fair and complete *résumé* of the various forms of cataract, and their many methods of treatment now in use. Of so technical and descriptive a character is this chapter that the limited space of a general review is entirely too restricted to do it anything like justice; we must therefore refer the reader to the book itself.

Part IV. comprises "Functional Diseases," and is mostly taken up with a consideration of the disorders of refraction and accommodation. It has been the common opinion amongst the oculists of this country, that the author's knowledge concerning medical optics was neither very extensive nor very deep. This opinion we think erroneous, and our belief is that it took its origin, in great part, from some rather severe, and not very just strictures passed upon the author by the celebrated ophthalmologist and physiologist of Utrecht; though it is partly due, no doubt, to the fact that Stellwag, especially in his former editions, chose to express his views, which were correct enough in themselves, in a phraseology as unique as it is obscure. The true difficulty we believe to be, not that the author does not fully understand the subject which he attempts to treat, but that in order to avoid the diffuseness of former writers, and the introduction of intricate mathematical formulæ, he has so condensed his explanation of these subjects as to render them barely intelligible. The difficulty, it seems to us, is, that he states too much and teaches too little.

After some preliminary remarks on the anomalies of refraction and accommodation the author takes up the important subject of myopia, and deals with it as judiciously and thoroughly as the short space which he has allowed himself will permit. Contrary to what is usually the case with Stellwag, it is the treatment of the disorder which meets with our greatest approval, characterized as it is by an amount of good sense and judgment not often met with in other parts of the work. What the writer says in regard to the prophylactic treatment as to the choice of myopic children's amusement, and the especial importance of rightly guiding their mode of study, the manner in which they should sit, and the duration of their employment, is as true as it is important, and we especially recommend the following passage to those practitioners who imagine that the height of prudence and the summit of optical knowledge are reached by invariably prescribing the use of glasses for near work to myopes:—

> "The use of suitable glasses is not in itself injurious; on the contrary, spectacles of a proper focus and with suitable frames are to be considered as powerful therapeutic aids, which, by the neutralization of existing errors of adjustment, decidedly lessen the dangers attending short-sightedness, and hence they may be indicated in early age." (p. 596.)

The assertion, that "in low grades of developed myopia senile changes are often sufficient to render the eye far-sighted or even hypermetropic" (p. 591), we believe to be true notwithstanding the high authority against such a view. (*Donders.*)

The chapter on hypermetropia is, certainly, one of the poorest in the

book; and it is difficult to conceive how any one, so well acquainted with the subject as the author really is, could have written so poorly concerning it. Principles which are simple in themselves, and within the comprehension of all, are so handled by the author as to be nearly unintelligible, and the whole chapter is much more calculated to confound than to teach. Refraining from entering into details, which the limits of a review and the patience of our readers would prohibit, it seems inexplicable that one who, in his preface, states that he was the first to describe the true principles of the anomalies of refraction and accommodation, and to insist that "the nucleus of this subject lies in the strict separation of refraction and accommodation," should so far forget his own discovery as to assert, that among the diseases capable of developing hypermetropia "the chief is paralysis of the muscle of accommodation, as it often causes decided decrease of refractive power." (p. 603.) We can easily understand how the paralysis might bring forth the hypermetropia that had previously been latent, but how it can *cause* hypermetropia is beyond our comprehension. That hypermetropia is, as the author states, not always congenital, we believe to be true, though we cannot agree with him in regard to all the causes which he alleges may produce such a result.

We also believe with him that the "pathogenetic connection between hypermetropia and convergent squint has hitherto been insufficiently or falsely explained." Still, the explanation which the author himself gives and alleges to be "undoubtedly" correct, does not, as far as we can see, remove the insufficiency of former explanations or add a single new reason to the many which have been given as to the connection between the two conditions.

Many subjects worthy of comment, excellencies as well as deficiencies, have necessarily been passed over; but enough has been said to give the reader an idea of the general characteristics of the book. Its chief fault is that it is of too encyclopedical a character, and is rather a collection of ophthalmological facts than a broad and comprehensive treatise on the great principles of ophthalmic surgery. Still, no one can deny that if Stellwag is not a very philosophical writer he is a conscientious one, and if not a very original observer, he is, at least in most cases, a safe guide; and we have no hesitation in saying that his work, as a whole, is far the best which has as yet appeared in English; and as a book of reference for the consultation of authority in matters pertaining to the eye, is, probably, without its superior, even if it has its equal, in any language.

Hitherto our remarks have been restricted to the consideration of the subject-matter of the work itself, and not to its translation, concerning which it would be affirming too much to say that in all respects it is as perfect as might be wished; for oftentimes the meaning is obscured, sometimes even perverted. Still, in these exceptional cases the fact must be borne in mind that the original is an example of as difficult, not to say as poor, German as probably exists in medical literature; written as it is in a dialect and phraseology rarely, if ever, heard beyond the limits of Vienna. As we are not among the very few in this country who possess a thorough knowledge of the Viennese dialect, we cannot but feel that the translators are entitled rather to our thanks than our criticisms; nor can we help expressing our admiration of the courage which prompted and the perseverance which has accomplished so colossal an undertaking. E. L.

ART. XVI.—*The Surgical Treatment of the Diseases of Infancy and Childhood.* By T. HOLMES, M. A., Cantab., Surgeon to the Hospital for Sick Children, etc. etc. 8vo. pp. xxvi., 648. London: Longmans, Green, Reader, and Dyer, 1868.

IT has long been a favourite project with the author of this handsome volume, as we learn from his preface, to furnish a systematic treatise upon the practical surgery of children's diseases. Some special subjects he has omitted, such as affections of the eye and ear, and of the skin, club-foot, etc., for the reason that these are already abundantly dealt with in text-books that are in the hands of every one interested in those subjects. With these exceptions, Mr. Holmes has endeavoured to embrace everything connected with the practical surgery of childhood, and now, on the eve of resigning his position in that institution whence his material for observation has been principally derived, presents the fruit of his labours to his colleagues and to the profession at large as an evidence, he modestly says, that he has "at any rate attempted to use the opportunities so liberally afforded."

In what manner and with what success he has accomplished his design, it is our purpose to inquire; and in so doing we shall endeavour to furnish to our readers a short but sufficient abstract of the more important matters which are embraced in the various chapters of Mr. Holmes' treatise.

From motives of convenience, our author divides his work into three parts; the first, containing thirteen chapters, being devoted to *malformations*, and the second and third, containing respectively five and nineteen chapters, dealing the one with *injuries* and the other with *diseases*.

In Chapter I. our author treats of *joined twins, attached and included fœtus*, and *congenital sacral tumour*. Several cases of joined twins are referred to, the best known being the Siamese twins and the Hungarian sisters. With regard to the former Mr. Holmes may be pleased to hear that they are in good health, married (we believe to sisters), and, if newspaper report be reliable, soon about to test the possibility of separate existence by submitting to a division of their connecting band by surgical interference. Of the eight cases of joined twins which Mr. Holmes has collected, only one was successfully subjected to operation (König's case) and even in this it is doubtful whether the supposed uniting band was anything more than a fusion of the two umbilical cords. In another case (Treyling's) an attempt was made to separate a pair of female twins when they had attained the age of four months, but unfortunately with fatal consequences.

"The result then of our present limited experience in the matter of joined twins appears to be, that when the band of union is rather the result of a fusion of the umbilical cords than of any portions of the bodies of the fœtus, the attempt to separate them may be made with good prospect of success; but that when the sacral regions are blended together the chance is very great that the spinal cords or some other vital parts are united, and that in this and all other regions it is only with great hesitation and circumspection that any such attempt ought to be countenanced."

Next to cases of joined twins, those of attached and included fœtus are considered, the latter being a mere variety of the former, the monstrous growth being imperceptible at birth, and not developing itself for a greater or less time subsequently. Of the malformation known as *attached fœtus*

"the most common example is the presence of a monstrous third lower extremity growing from the sacral region between the natural legs." This is not, however, the only situation in which such growths have been observed. In a native of Macao, the dwarfed remains of a twin fœtus projected from the chest, and in a case successfully operated upon by Prof. Pancoast, of this city, the cheek was the seat of the abdominal development. [See *Holmes' System of Surgery*, vol. iv. page 804.]

With regard to the treatment of these cases, it is believed by our author "that the attempt to remove attached fœtal remains is in many instances highly advisable, and the more so as the primary growth seems no measure of the extent which it may ultimately reach. . . . . Nor if the parasitic formation seems too large to be removed at one operation, can there be any reason . . . . why it may not be strangulated in parts or removed piecemeal. . . . . In the case of supernumerary limbs it does not appear necessary to entirely eradicate them, as no doubt the removal of the part which projects visibly would be sufficient."

The next topic for discussion is the congenital fœtal tumour, generally situated in the sacral region. Nearly allied to these are those cases where congenital tumours are found to contain bones or even dermoid elements, such as teeth or hairs. In many of these cases it is extremely difficult, if not impossible, to ascertain positively whether or no there be any connection with intrafœtation.

"It is clear enough . . . . that in congenital sacral tumour, whether from fœtal inclusion or no, the question of surgical interference depends not on the origin but on the connections of the tumour; that is to say, that there are fœtal tumours which may be removed with perfect success, while there may be other tumours, not fœtal, in which the formation may be so far within the pelvis as to be inaccessible to the knife. Another point is, I think, equally clear from the records of the treatment of such cases, viz., that the total removal of the tumour is a safer course, if surgical interference is admissible at all, than any partial operation."

"*Congenital Innocent Tumour, or Hypertrophy,*" is considered in Chapter II. The latter designation Mr. Holmes believes to be anatomically the correct one, for "the congenital 'tumour,' as for surgical purposes we must call it, is really nothing more than an exaggeration, as it were, of the normal tissue of the part." The congenital hydrocele of the neck is not, strictly speaking, a tumour in the sense which reserves that term for neoplasms or new growths, but an enormous development of the natural areolar spaces and of the septa which separate them. Still, it is convenient to retain the term congenital tumour, and with this explanation Mr. Holmes proceeds to consider the regional anatomy of these growths, their progress, diagnosis from other congenital affections, and appropriate treatment. Much valuable and interesting information is given under these heads, for which we must refer the reader to the work itself; with regard to the treatment, however, we may observe that Mr. Holmes rejects such measures as the use of large setons, *cautérization en flèches*, and successive incision of cysts, preferring the use of small setons or the injection of iodine in cases where the cystic element predominates, and complete extirpation in the cases of solid growths or where milder measures have failed. It should always be borne in mind, however, that many congenital tumours remain inactive for an indefinite time, and some certainly undergo a spontaneous cure; hence, in a considerable number of cases, no treatment whatever is to be recommended.

Fatty tumours are occasionally congenital, and still more rarely cancerous

growths are met with in new-born infants. *Dermoid cysts* are most usually found near the outer and upper angle of the orbit; they should be removed as soon as possible. Congenital dermoid cysts of the scalp are of especial interest on account of their occasional great resemblance to cases of meningocele.

A handsome coloured plate accompanies this chapter, giving the appearances before and after operation of a remarkable case in which a congenital hypertrophy was covered with a warty growth. The operation was completely successful.

The subject of Nævus is treated of in Chapter III., which contains many interesting remarks with regard to the diagnosis and treatment of this affection. A curious case is quoted from Guersant, where a meningocele was mistaken for nævus, and treated by the introduction of setons, the error in diagnosis not being revealed until after the death of the patient.

"I have not as yet seen, nor can I discover, either in published cases or in the experience of my surgical colleagues, any case in which a congenital nævus has proved fatal. . . . This is a significant fact in discussing dangerous operations for its cure."

Mr. Holmes does not recommend the treatment by total excision or enucleation as advocated by Mr. Teale in the last volume of the *Medico-Chirurgical Transactions*. (See notice in No. of this Journal for April, 1868, p. 488.)

Malformations of the skull, encephalocele and meningocele, are discussed in Chapter IV. Both of these affections appear to be caused by one or other variety of hydrocephalus, and while their seat is commonly the occipital region, they are occasionally met with in other parts, and several cases are related to illustrate the occasional difficulty of diagnosis under such circumstances. With regard to the treatment Mr. Holmes gives the following practical directions, which he believes to be the best that can be laid down from present experience:—

"1. As a general rule nothing ought to be done beyond supporting the tumour and making gentle pressure by means of some bandage or cap, lined with cotton-wool, to prevent ulceration. Perhaps as convenient a form as any other is to apply a gutta-percha cover on the tumour, and line it with layers of wadding, which can be gradually increased in number as the tumour yields to pressure.

2. If there are obvious symptoms of general hydrocephalus, no operative measure is admissible.

3. If there be a watery tumour which is rapidly on the increase, without other symptoms, repeated puncture may be tried; all possible precautions against the entrance of air being taken.

4. If this method fails, the injection of iodine may be tried. Those cases appear to be best fitted for this method in which the tumour, as far as can be judged, is free from the presence of cerebral matter, and has a stalk or pedicle.

5. All irritating applications to the skin are worse than useless. They cannot cure the disease, and may easily produce sloughing of the skin, and so burst the tumour and cause death.

6. Finally, there may be cases, however rare, in which the entire removal of the tumour might be contemplated. If the communication with the interior of the skull has become obliterated, the case is converted into one of ordinary cyst, with no more danger, and at the same time no more urgency, about the operation than in common tumours. . . . . In other cases, if it be determined to remove a tumour the pedicle of which is believed to have a communication with the cerebral cavity, the best method of operating would perhaps be to provide a clamp with narrow flat blades, something like that which is used by some surgeons in operating for piles. This clamp could be placed on the stalk of the tumour. The cyst could then be tapped, and as the fluid escaped, the blades of the clamp might be tightened, in order, if possible, to bring all parts of the

inner surface of the pedicle into contact with each other. This being done, the tumour should be removed, two small flaps of skin being preserved to cover the opening. These flaps being united carefully (by the continuous suture), the operation would be terminated. The clamp could be removed after a certain time, say twenty-four hours. Its application would be intended to produce such an amount of inflammation and extravasation of lymph as may procure the obliteration of the pedicle, without so much or such long-continued pressure as would cause ulceration of the skin."

The subject of *Spina Bifida* is treated of in Chapter V. Here again the diagnosis is usually easy, yet a girl of seven was admitted into St. George's Hospital with a fatty tumour in the middle line of the lumbar region, which had been permitted to remain till it weighed almost thirteen pounds, under the impression that it was a spina bifida. From congenital cystic tumours which might happen to be developed in the median line of the back, spina bifida could be distinguished by the presence of the spinous processes beneath the tumour in the former class of cases, or if this point could not be determined, possibly by the character of the contained fluid.

"Other congenital spinal tumours (false spina bifida) are hardly to be distinguished from the true type of the disease; but the diagnosis is of little moment, even if removal is in question, for the practical considerations would in both cases be the same."

In a few cases, spina bifida undergoes spontaneous cure, the sac withering away without bursting, while in other instances the patient lives an indefinite time (in one case to the age of 50) without experiencing any particular inconvenience from his deformity.

Our readers will find an interesting case in point in the Proceedings of the Philadelphia Pathological Society for Nov. 14, 1866. (See No. of this Journal for July, 1867, p. 137.) In this instance the patient was thirty-two years old, and is stated by Dr. Wm. Pepper, who observed the case in the Pennsylvania Hospital, to have presented no symptoms referable to his spina bifida, and to have died of an entirely distinct affection.

In most cases, however, the disease proves fatal after a longer or shorter period; and hence, Mr. Holmes differs from those writers who believe that surgical interference is never justifiable in spina bifida.

"I admit this rule as applicable to the great majority of cases, but I hold that some operative measure is indicated (1) in cases in which the integument is very thin or is absent, so that the patient will in all probability soon die from the bursting of the tumour; (2) in cases in which convulsions, depending as far as can be made out on the presence of the tumour, are frequent; and (3) in cases in which paralysis is present, and is not relieved by the mere evacuation of the fluid."

The treatment usually to be recommended is pressure, sometimes preceded by evacuation of the fluid through a simple puncture. Of more active measures the most promising in Mr. Holmes' opinion is the injection of iodine as practised by Dr. Brainard or by M. Velpeau. If excision is to be resorted to, the knife should be used in preference to the ligature, as the obtaining of union by first intention affords the only hope of success.

With regard to the treatment of "false spina bifida," under which name several distinct affections are included (which have in common that they communicate with the cavity of the spinal canal, though not with that of the membranes), the connections of the tumour to the spinal canal and other important parts must be carefully considered. In cases that appear to justify interference, the surgeon may inject iodine, or may pass a small seton through the tumour; should these measures fail, the question of excision may be considered.

The subjects of *hare-lip and other malformations of the face* are discussed in Chapter VI. The ordinary operations for the cure of hare-lip are well described, and we are pleased to observe that Mr. Holmes has not thought it necessary to add any new method of his own invention.[1] In cases of double hare-lip with projection of the intermaxillary bone, the latter should be always preserved if possible.

"In the slighter cases of projection of the intermaxillary bone, it is merely necessary to fracture its attachments to the septum, and to press it back into position; or if it be too large to fit the gap, the exuberant parts must be pared away at the sides. In the latter case it is better also to refresh the sides of the upper jaw-bones."

In cases of greater deformity, Blandin's operation, with or without Bruns' or Langenbeck's modifications, may be employed. With regard to the use of anæsthetics, Mr. Holmes thinks the danger from blood running into the trachea has been exaggerated; still, as there is no doubt some risk in the use of anæsthetics, and no very great advantage, he does not himself employ them in hare-lip operations. In simple cases, the sooner the deformity is remedied the better; and even in those which are more complicated, the operation should not usually be postponed beyond the age of two months.

Chapter VII. treats of *fissured palate in childhood*, and is characterized by the same tone of practical common sense which is observable in the preceding portions of the volume. If the child is not hindered from taking nourishment by the deformity, Mr. Holmes thinks it better to defer the operation till from the eighth to the twelfth month of life. In any case operated on during infancy, the use of an anæsthetic, and of some such instrument as the gag employed by Mr. T. Smith, is essential.

Chapter VIII. continues the discussion of *deformities of the face*, taking up in succession hypertrophy of the tongue, tongue-tie, and malformations of the ear. A few remarks are also made upon the rarer deformities known as atresia oris, microstoma and macrostoma congenitum, fissure of the lower lip, and fissures and congenital absence of the nose.

Tongue-tie may occasionally require treatment to enable the child to suck: the operation consists in a simple division of the frænum with a pair of blunt-pointed scissors. We have seen a hospital surgeon perform a complicated subcutaneous tenotomy, or rather myotomy, in the submental space, on a child several years of age, with a view of remedying dumbness. This treatment seems to be founded upon an erroneous idea, for, as pointed out by Mr. Holmes in the chapter before us, the power of articulate speech is not lost even after total extirpation of the tongue.

Congenital malformations of the neck are treated of in Chapter IX. In cases of congenital obstruction of the œsophagus, where the deformity is complicated with tracheal fistula, it is probable that life could not be permanently maintained even if the passage of food could be restored, and in such cases, Mr. Holmes thinks no operation should be attempted. Where no such complication exists, however, an operation might be performed, though its success would be very doubtful.

Congenital tracheal fistulæ are best left untreated: for the deformity is slight and easy of concealment, and any operative measures for its cure would be of necessity attended with considerable risk.

Extroversion, or congenital hiatus of the bladder, is considered in Chap.

[1] Among the most ingenious of the "new methods" (though not mentioned by our author) is that recently proposed by Dr. Collis, of the Meath Hospital; see Dublin Quarterly Journal of Medical Science, May, 1868, p. 292.

X. The various operations which have been proposed and practised for the relief of this distressing deformity are described, as well as a new process which Mr. Holmes designs to employ should he again meet with a case which should seem to require it. For the details of this plan, which seems to us both ingenious and promising, we must refer our readers to the volume itself. The palliative or plastic operation, which aims merely at remedying the most painful consequences of the deformity, has been frequently performed and often with very good results. Two coloured plates accompany this chapter, showing the appearances in a case before and after operation.

Chapter XI. is one of very great importance, and one which we wish could be read by every surgeon and physician in our land. The subject is *imperforate anus* and *imperforate rectum*. The different varieties of these malformations are fully described, and the means of treatment appropriate to each clearly indicated. We would gladly make many extracts from this most excellent chapter, but must confine ourselves to the following:—

"The entire absence of the lower bowel, though a most formidable affection, is not absolutely fatal, if treated by an appropriate surgical operation. . . . It is, indeed, argued in some surgical works, that operations in these cases are unjustifiable, for that the condition of a patient with artificial anus is so horrible, and so disgusting to himself and others, that, sooner than place him in such a condition, the surgeon ought to abandon him to death. Now, in the first place, I doubt altogether the morality of this reasoning. I do not think that we have any right to abandon a patient to certain death, if we know of any means likely to save him. . . . This is the case even with patients of mature years, who may possibly be able to judge of the prospect before them, and who have some claim to be allowed to act on their own independent judgment. But what right have we to judge for an infant, who can form no judgment for himself? What right have his parents to condemn him to death, in preference to living with an infirmity which, though perhaps troublesome on account of the attention it may require from them, and possibly disgusting to them from its results, may be to him a matter almost of indifference: at any rate may not preclude him from enjoying many of the comforts and amusements of life, nor even from performing its active duties?"

We may add that when the bowel cannot be reached from the perineum, the proper mode of treatment is to perform colotomy by Littré's method, in which the incision is made in the left groin.

Malformations of the umbilicus and of the *genital organs*, together with *hermaphroditism*, are treated of in Chapter XII. Phimosis, epispadias, and hypospadias are successively considered, and the operations suited for each case well described. Congenital obliteration of the urethra should be treated as impermeable stricture in the adult, and congenital perineal fistula as the same affection when not congenital. Mr. Holmes' remarks upon hermaphroditism are brief, but practical and judicious. He appears not to be acquainted with Prof. Gross's remarkable case published in the *Transactions* of the Kentucky State Medical Society. [See this Journal for Oct. 1852, page 386.] With regard to cases of imperforate hymen or imperforate vagina, Mr. Holmes very properly advises that operative measures should be employed before the commencement of menstruation.

"It is true that the small size of the parts renders the operation more difficult and anatomically more dangerous; but the latter danger is, I think, outweighed by the far less danger pathologically."

Chapter XIII. concludes the first part of the volume, and is devoted to a consideration of the malformations of the limbs. Unsymmetrical hypertrophy as a rule calls for amputation in an early stage of the disease. In

symmetrical hypertrophy Mr. Holmes would be disposed to try deligation of the main artery as practised in cases of elephantiasis. For the treatment of webbed fingers, Mr. Barwell's ingenious operation is described and favourably spoken of. In the management of congenital dislocations, extension and instrumental treatment may be employed, with the preliminary use in some cases of tenotomy, as practised by Mr. Brodhurst. [See paper in *St. George's Hosp. Reports*, vol. i., and notice in No. of this Journal for July, 1867, pp. 194–5.]

We have thus concluded our examination of the first portion of Mr. Holmes's work, to which we have devoted more space, proportionally, than can be afforded to the remainder; not that his remarks on the injuries and diseases of childhood are less worthy of attention than his views upon the treatment of their deformities, but that the latter are, perhaps, more perplexing to ordinary practitioners, and have seemed, therefore, to call for more extended consideration.

The first Chapter (XIV.) of the second part treats of *contusions*, of *wounds*, and of *surgical operations*. The administration of anæsthetics is very frequently needful in the treatment of the surgical affections of childhood: should asphyxia come on during the use of the anæsthetic, the tongue must be drawn forwards and artificial respiration at once resorted to. The best method of performing artificial respiration in these cases is, in the opinion of Mr. Holmes (and we entirely agree with him), by simple manipulation of the thoracic walls. Our author's views as to the best means of suppressing hemorrhage coincide so completely with our own that we cannot forbear quoting them in his own words:—

"I confess that I am in favour, as far as present experience goes, of the old method of tying the vessels, over the new one of securing them with needles, in operations on children. The reason of this is the very plain one, that I have never seen any harm whatever from the use of silk ligatures in childhood, nor in the experience I have had (which, I must allow, has been limited) any good whatever from the use of acupressure. It should be remembered that in childhood the vessels are small, and, therefore, the ligatures soon separate. That they strangulate a small portion of tissue, and in most cases cause that small portion to slough, is true enough; but any one who will be at the trouble of examining the matter which comes away in the noose will see how small that portion is; and I am confident that any one who will watch the progress of an ordinary amputation in childhood, will soon come to the conclusion that any effect which such sloughing may have on the general system (if, indeed, it has any effect at all) has been very grossly exaggerated. If the ultimate advantage derived from the use of acupressure is to obviate the secondary complications of wounds, I may say with truth that almost every case which I can remember as dying after operation from any such complications, has been in excisions where no ligatures have been used, but where large sections of bone have been left exposed in suppurating cavities. On the other hand, the use of the requisite number of ligatures in amputations or operations for the removal of tumours has never, so far as I have seen, prevented the rapid union of the wound; and in amputation quite sufficient primary union will be secured to maintain the rounded shape of the stump. For these reasons, I am skeptical of the great advantages to be derived from acupressure—at least in children's surgery; whilst I regard any complication in the dressing of the wound as a positive and great evil. Now, although it is true that the withdrawal of acupressure-needles is often painless, it is not always so. If any large number of needles has been used, the flaps must be adjusted after their removal. All this complicates the proceeding, and occasions the child pain and fright, for the problematical advantage of avoiding the formation of a few drops of pus."

Fractures and *dislocations*, and *ruptures of the viscera* are considered in Chap. XV. With regard to fractures of the clavicle, Mr. Holmes says:—

"I have seen several cases in which no deformity existed from the first, and which, of course, recovered without any particular trace of the injury; but I cannot honestly say that I have ever noticed one in which surgical treatment proved successful in removing deformity. The lump which follows immediately on the consolidation of the fracture will become less perceptible with time; but if any considerable displacement exists at first, I do not think any treatment will succeed in removing it."

In cases of compound fracture of the elbow, Mr. Holmes recommends excision as the general rule of practice. Separation of the upper epiphysis of the tibia must be a very rare accident, for our author has never met with such a case, and knows of but one which has been reported—that stated by Madame Lachapelle to have occurred during delivery. [*Packard's Malgaigne*, p. 70.] A very well-marked case of this injury came under our care at the Episcopal Hospital during our last term of service. The patient was a boy, eleven years of age, who had been hurt by being caught between the bumpers of railway cars. The injury was accompanied by such frightful laceration of all the soft tissues as to require amputation in the lower third of the thigh. The nature of the lesion was thus verified by dissection, and the specimen is preserved in the hospital museum.

Mr. Holmes reprobates, and we think very properly, the practice of treating fractures of the lower extremity in children without apparatus. A plan of treating fractures of the leg in infants, which we have found to answer admirably during the acute stage of the injury, is to envelope the whole limb in a soft pillow, which is secured by the firm application of a roller bandage. This effectually prevents any harm from being inflicted by the child's restlessness, which cannot be prevented, and is not attended with the risks which are so apt to accompany the use of any immovable apparatus.

Chap. XVI., on *burns and scalds*, is interesting, and contains much of practical importance. We would especially invite the attention of our readers to Mr. Holmes's remarks upon the treatment of contracted cicatrices.

Foreign bodies in the nose, ear, fauces, œsophagus, and stomach are treated of in Chapter XVII. A practical remark as to the treatment to be adopted in cases where foreign bodies have been swallowed, is of importance. Such food should be given as would rather retard than hasten the action of the bowels, so that the foreign body may be surrounded with a considerable mass of feces. The use of purgatives should be avoided, but if the case should be seen sufficiently soon, an emetic might possibly dislodge the foreign body before it had reached the intestine.

In Chapter XVIII. *injuries and foreign bodies in the trachea, tracheotomy, and the various causes requiring this operation in childhood* are discussed. In cases of scalds and burns, tracheotomy should be delayed as long as possible; for where the dyspnœa depends on lesion of the parts in immediate proximity to the glottis, much success cannot be hoped for under any circumstances, while if it be purely spasmodic, it can probably be relieved by milder measures. Mr. Holmes's remarks on fracture and rupture of the trachea are principally founded on Dr. Hunt's valuable paper, published in the number of this Journal for April, 1866. [pages 378–383.] An interesting case of this injury, which has apparently escaped the attention of both gentlemen, may be found in *Lonsdale's Treatise on Fractures*, page 239.

This chapter is quite elaborate and of much importance; it contains a table giving the details of twenty-eight cases of tumour of the larynx, derived from the Transactions of the Pathological Society.

In the last volume of *St. Bartholomew's Hospital Reports* was published an excellent paper by Mr. Marsh, which recommended *tracheotomy*

as always preferable to *laryngotomy*. [See notice in number of this Journal for July, 1868, pages 223-4.] In this recommendation, Mr. Holmes does not coincide; and we must say, that he advances many cogent reasons why the operation through the larynx should be adopted, at least in cases of children. This chapter, which completes the second part, is by no means the least valuable of the volume.

The *morbid diatheses of childhood, cancer, struma, rickets, syphilis*, are treated of in Chapter XIX. :—

"I have often," says Mr. Holmes, "seen much difficulty in establishing a diagnosis between ostitis and malignant disease, and have known at least three cases in which amputation at the hip-joint has been contemplated for an affection of the femur, which turned out afterwards to be of a simple inflammatory nature. All these patients were children; one of them, however, near the age of puberty."

We may add, that we have known a similar mistake to be made in cases of adults, where, perhaps, it was even less excusable than where the patient had not passed the age of childhood.

"But, one practical consideration must occur to the mind of any one charged with the responsibility of a case of this kind, viz., that no operation (and especially none of so formidable a nature as amputation at the hip) ought to be proposed while any doubt whatever rests on the diagnosis. If the case is one really of cancer, the operation is, at the best, of doubtful value; if it be ostitis, it is worse than superfluous."

Mr. Holmes's remarks upon the relationship and yet difference between tubercle and scrofula, and between the latter and syphilis, are full of interest, and eminently judicious and practical. *Struma* is a general term which may be conveniently retained, being understood to embrace three distinct though analogous classes of cases. These are the tuberculous, the scrofulous, and a third class of cases "in which there is not only no tendency to tubercle, but no real constitutional affection whatever, which are merely examples of chronic inflammation set up by local causes."

The general treatment of all these cases consists principally in the adoption of the hygienic measures which all surgeons agree in recommending. With regard to the local treatment, we quote the following :—

"To all" (the three sets of cases above referred to) "the same general principle of palliative treatment is applicable: never to be in any hurry, and never to apply any operative treatment, even so much as a simple incision, without obvious necessity. The diseases in all the three classes of cases are chronic, and nothing seems to me more absurd, and more contrary to all sound principles of surgery, than to convert a chronic disease into an acute one unnecessarily by operative interference."

Where, however, an operation appears unavoidable, the distinction of the three classes above indicated becomes very important for prognosis. In cases where there is evidence of tubercle, operative measures are generally not desirable; and even if they should be demanded to relieve the local suffering, the prognosis must of necessity be very guarded. In the other two classes, on the contrary, operative treatment may be expected to be followed by the most happy results. The liability of prolonged suppuration and confinement to induce the deposit of tubercle must be also borne in mind, as well as the fact that suppuration of itself, if long continued, is now known to be a cause of visceral degeneration, the so-called waxy or amyloid, or, as Dr. Dickinson has termed it, depurative degeneration of the liver and kidneys. [See number of this Journal for April, 1868, pp. 467 and 491.]

Mr. Holmes's remarks on rickets and on infantile syphilis are well worthy of attention; but we must pass on to other matters, merely stating that our author is decidedly in favour of employing mechanical support and pressure in the early stages of rickets, believing that thus if deformity cannot be removed, it can at least be prevented from increasing.

Chapter XX. is devoted to the consideration of *gangrene in childhood*. The parts usually affected are the mouth and cheek, and the female genital organs, constituting thus the diseases known respectively as *cancrum oris* and *noma pudendi*.

A disputed point is, as to the influence of mercury in causing cancrum oris. Mr. Cooper Forster believes the use of that drug to have a decided causal relationship to the disease. Dr. West, on the other hand, looks upon the coincidence as purely accidental. Mr. Holmes believes "that as far as mercury acts as a depressing agent, it may indirectly occasion the complaint; but that the proof of its direct action, by producing inflammation and ulceration of the mouth, leading to gangrene, is hardly complete."

The symptoms and course of the disease are well described, and the opinion expressed, that if the disease could be recognized and properly treated in its earliest stages, it would be found less fatal than it now appears to be. The best local remedy, Mr. Holmes believes to be the strong nitric acid, which must be thoroughly applied to every part of the diseased surface, the child, of course, being in a state of anæsthesia. In some cases it may be necessary to apply the acid more than once. The child must be frequently supplied with food and stimulus; and Mr. Holmes is in the habit of administering the chlorate of potassa, though he has never convinced himself that it has any influence on the progress of the disease.

Noma pudendi, if extensive, is a very fatal disease, and sudden death sometimes occurs even when all danger seems to have passed by. The treatment is similar to that employed for the affection of the mouth.

In Chapter XXI., on *tumours in childhood*, are given the histories of three cases of considerable interest, which show the ease with which large tumours may be removed at an early age, and likewise illustrate the importance of removing morbid growths before they have attained large size and have acquired deep connections. One hint of practical importance is, that while skin which is merely overstretched by the increase of a tumour, should be allowed to remain, the case is different with congenital growths, for here there has been originally more skin than is required by the natural size and shape of the parts, and hence, in such cases, less unsightly scars will be obtained by removing the superfluous tissue.

Chapter XXII., on *diseases of bone*, treats of diffuse or acute periostitis (acute periosteal abscess), acute necrosis, osteomyelitis, ostitis, caries, and necrosis, with remarks on the operations known respectively as subperiosteal resection, and gouging (*évidement des os*). We have so recently gone over the subject of bone pathology in our review of M. Ollier's elaborate treatise [see number of this Journal for January, 1868, pp. 140–165], that we shall not dwell on this portion of the volume, further than to state that it is marked by the same clearness of expression and good, practical common sense, which characterize all of our author's writings. The coloured plate that adorns this chapter we recognize as an old friend, it having already done service in one of Mr. Holmes's papers, in the first volume of St. George's Hospital Reports.

Diseases of the joints are considered in Chapter XXIII., which is well worthy of careful study on the part of every practising surgeon. Mr. Holmes doubts, and we think with reason, the advantages supposed to be

derived from the refinements of pathological anatomy in endeavouring to fix the exact tissue which in any particular case of joint disease is primarily involved. For, in fact, it is generally impossible in practice to make these exact distinctions, most cases exhibiting a simultaneous affection of more than one of the joint tissues, and it not being by any means certain that the part which first manifests a morbid condition has been actually the first to become diseased. Mr. H. generally approves the practice of freely opening joints when affected with acute abscess, at least in cases of children.

"It should not be forgotten, however, that incisions, if they do no good, will certainly do harm. I think every surgeon must have seen, and seen with regret, in adults, the profound and rapid exhaustion which often follows the free incision of the knee-joint, and how frequently amputation is resorted to afterwards when the patient is sinking and when the operation hardly can succeed, while if the limb had been removed in the beginning, the patient would have had, at any rate, a fair prospect of the preservation of his life."

Acute disease of the knee-joint often demands amputation, which, in these cases, Mr. Holmes thinks preferable to excision. In the elbow, on the contrary, excision is a very promising mode of treatment. Acute abscess of the hip and shoulder scarcely admits of any treatment beyond free incision. In the former case the danger to life is very great, but in the shoulder recovery may be usually anticipated, though loss of motion is almost inevitable.

"Operations in chronic joint-disease would be hardly ever necessary but for the neglect with which this class of diseases is generally treated."

To the truth of this aphorism we most cordially subscribe. We believe that there is scarcely any class of cases in the management of which so much carelessness and ignorance are shown by ordinarily good surgeons, as in chronic joint affections. Again and again have we known nurses or parents told to "hang a weight to the child's foot," in cases of hip-disease, and this thought all-sufficient as a means of treatment. What is the result? Even supposing the child does not elude the applied extension by slipping down in bed till the weight rests on the floor, the diseased joint is not kept at rest, for he will sit up in bed or turn on his side, and the great object of treatment is at once defeated. Mr. Syme's dogma, referred to by our author, that the reason excision of the hip is more common in England than in Scotland, is that in the latter country they treat hip-disease with the long splint, has in it this much truth, that the long splint, properly adjusted, necessitates perfect rest of the hip-joint, which no other means of treatment that we know of, unless Physick's carved splint (see number of this Journal, Feb. 1831), or some modification of the same, can do. Not but that the weight and sand-bags, or other mode of extension, will produce the same effect, if the patient can be induced to keep still, but this, even in the most tractable children, can often not be obtained. Hence, we not unfrequently superadd the long splint to the ordinary extending apparatus, with the most satisfactory results.

With the following remarks of Mr. Holmes we entirely agree:—

"I have no hesitation in saying that we constantly see limbs sacrificed in consequence of the neglect of the surgeon who was first called in, and who has not followed the plain rule of surgery, to provide the joint with mechanical support, and keep it at absolute rest. I think it beyond question, that if every strumous joint were to be put up in well-fitting splints when first seen, and the splints kept on constantly, we should see far fewer cripples about our streets, and find our experience in excision of the knee and hip materially curtailed."

Hip-disease and excision of the hip are treated of in Chapter XXIV.

The pathological anatomy and the symptoms of the disease are discussed, and the fact stated, that while true consecutive dislocation does occasionally occur, the deformity is generally due to an enlargement of the acetabulum, with which the head of the femur still remains in contact. The diagnostic marks of the affection are well indicated, and the mode of treatment by the weight and pulley clearly described. As we have said above, we have found advantage from the combination of this apparatus with the long splint.

Forcible straightening of the limb, under chloroform, as recommended by Bonnet, of Lyons, is advised in cases of deformity. Mr. Holmes has occasionally performed tenotomy in these cases, without, so far as he knows, either good or bad result. In cases of caries, the question of excision or amputation is presented, and upon this point our author speaks with authority, having apparently excised the hip-joint more frequently than any other surgeon, living or deceased. As we hope before long to present to the profession our own views upon this subject, in another form, we shall not dwell upon this chapter further than to commend it to the careful attention of our readers.

Chapter XXV. treats of *excision of the knee*. This operation Mr. Holmes believes to be more fatal than amputation. Without entering upon this point, we will observe that it is very unfair to compare excisions of the knee with thigh amputations, without regard to the point of operation. Amputation of the thigh, in general terms, is a very dangerous proceeding; but amputation at the knee-joint (which is much more comparable with excision) presents, when practised for disease, the comparatively small mortality of 24 per cent., and Mr. Carden's sixteen cases of amputation for disease of the joint, through the condyles of the femur, were uniformly successful [see Dr. Brinton's paper in number of this Journal for April, 1868, pages 328 and 332]. On the other hand, 113 cases of excision of the knee, collected by Mr. Butcher, give a mortality of over 27 per cent., though of course, in many of these cases, the deaths were from causes unconnected with the operation employed. Mr. Holmes is by no means an enemy of excision, but recommends it and practises it in all cases where he thinks it offers a reasonable prospect of success. Arrest of growth does undoubtedly sometimes follow the operation, but it need not be much dreaded, provided the bone section is kept within the limits of the epiphysis. The operation is not to be forbidden in childhood, but Mr. Holmes thinks it promises best in patients about fourteen years of age. In general terms, excision is most applicable for the most favourable cases, and when it does succeed, its results are beyond all comparison superior to those of amputation. In the after-treatment of cases of excision, Mr. Holmes usually prefers the straight tin or iron splint recommended by the late Mr. Price.

The two next chapters deal respectively with *excisions in the foot and in the upper extremity*. These are both interesting, and the first appears to us especially valuable. Mr. Holmes has repeatedly excised the calcaneum, and in several cases the astragalus and other tarsal bones. We have, as yet, much to learn as to the application of conservative surgery to the foot, and we hail Mr. Holmes's teachings as powerful and well-directed efforts in the right direction. We think, however, that he scarcely does justice to the sub-periosteal method of M. Ollier; we confess that we have not, as yet, met with the brilliant results spoken of by the French surgeon, yet we should think it right to endeavour to preserve as much periosteum as possible in every excision we should be called upon to perform. In the second chapter is given a most interesting case of successful excision of both elbow-joints in a child five years of age.

Chapter XXVIII. treats of *amputation in childhood*, and is eminently practical and judicious; as, however, its most interesting points have been previously discussed in the author's papers in the first volume of *St. George's Hospital Reports*, we would refer our readers to our review of that work in the number of this Journal for July, 1867, pp. 192 and 197.

Chapter XXIX. is devoted to the consideration of *diseases of the spine*. We quote Mr. Holmes's opinion as to the treatment of psoas abscess, which seems to us entirely correct.

"With regard to opening abscesses connected with spinal disease, my own experience leads me to dissuade it. However effected, and with whatever precautions, I think it generally does more harm than good."

In some cases it may be proper to open a spinal abscess while still in the iliac fossa behind the peritoneum, and in any case where it is decided to operate, it may be advantageously done, as suggested by Prof. Lister, under the local application of carbolic acid.

Chapter XXX. treats of *diseases of the mouth*. It may occasionally become necessary to remove enlarged tonsils, though in the large majority of cases medical treatment is sufficient. The operation may be performed with hooked forceps and with bistoury, or with Charrière's, a modification of Fahnestock's, guillotine (see No. of this Journal for Nov. 1832, p. 249); or in some cases caustic potassa may be applied, as recently recommended by Mr. W. J. Smith.

Affections of the intestines are the subject of Chapter XXXI. For the patency of the umbilical ring which is so common in infancy, and which, if neglected, gives rise to umbilical hernia, Mr. Holmes recommends the application of a flattened pad, kept on by strapping or by an elastic band. The plan which we learnt from our preceptor, Prof. Carson, of the University of Pennsylvania, and which has always proved satisfactory in our hands, is to apply a simple strip of adhesive plaster about four inches long by one inch and a half wide, so as to approximate the edges of the ring and keep them in place. This strip may be renewed as often as it becomes detached by washing, and in the course of a few weeks has never failed in our hands to effect closure of the ring.

Our author does not recommend any operation for the so-called radical cure of hernia, preferring to rely upon instrumental support, which, in children, often suffices to effect a cure. One very strong argument, we have always thought, against the adoption of any operation for the radical cure, is based upon the fact that in many, if not in all cases of hernia, there is a positive abnormal elongation of the mesentery, a condition which, of course, cannot be remedied by any operative measure. [See Mr. Birkett's essay in *Holmes's System of Surgery*, vol. iv. p. 230, and reviewed in number of this Journal for April, 1865, p. 428.] This chapter is adorned with two coloured plates, representing a rare case of congenital vaginal hernia, before and after operation.

The next two chapters treat respectively of *diseases of the rectum*, and of *diseases of the bladder*. They are both excellent, and full of useful practical information. With regard to the medical treatment of enuresis, we may mention that we have heard of one most obstinate case, which finally yielded to the hypodermic administration of atropia; the use of belladonna, by the mouth, having previously failed.

Chapter XXXIV. is on *stone in the bladder*. "I do not," says Mr. Holmes, "fear the imputation of clinging to old fashions when I avow my strong conviction that in children (by which I mean in males below fifteen) there is no method so safe and so efficient as lateral lithotomy."

A very common fault in operating is thus referred to :—

"There seems an idea in the minds of some surgeons that there should be something unusual about the first incision, that it is necessary to stab the point of the knife deeply into the perinæum at first starting. But this is certainly not necessary, and I do not think very safe. The point at which the groove of the staff is to be opened is at no great depth, far less than is ordinarily reached in the extraction of a tumour; the time required to cut down to this depth in the usual manner is quite insignificant, so that there is no reason for making a stab wildly into the tissues of the perinæum, instead of cutting through them in an orderly manner, and feeling from time to time for the staff."

We are glad to observe that Mr. Holmes directs that, in introducing the left forefinger into the bladder, it should be passed *between* the *upper* edge of the staff and the pubis. We believe that it is to a neglect of this precaution that a failure to enter the bladder is generally due. A rule that we have always followed in the operation of lithotomy, and which we think a very good rule where practicable, is not to withdraw the staff till the finger touches the stone, and then not to withdraw the finger till the forceps are fairly introduced; in fact, having once reached the stone, never to lose control of it till it has been extracted. Of course, there are some cases which defy the efforts of the most skilful surgeons, but we are convinced that the large majority of failures in lithotomy are from carelessness.

"As to the median operation (Allarton's, as it is usually, though not very correctly, called), I have but little experience, and cannot say that I wish to extend it. The median operation appears to me in all respects inferior to the lateral."

We quite agree with our author in his condemnation of the various complicated instruments which have been devised with the intention of facilitating the operation of lithotomy; a good surgeon has no need of them, and others had better follow the rule of the Hippocratic oath, and "not cut persons labouring under the stone, but leave this to be done by men who are practitioners of this work."

The remaining chapters of Mr. Holmes's work treat respectively of the diseases of the male and of the female generative organs, and of enlarged glands. His remarks upon each of these subjects are worthy of attention; but we have already occupied so much space that we must bring our review to a close. The volume is terminated with a sufficiently full index.

Mr. Holmes's book is, so far as we know, the first attempt to supply a complete and systematic treatise on the subject of the "surgical treatment of children's diseases." Hence, in reviewing it, we have not the advantage of being able to compare it with the productions of other authors. We have, therefore, preferred to give our readers an analysis of Mr. Holmes's views upon the various branches of his subject, rather than to indulge in criticism upon those views; though, to tell the truth, his opinions so generally coincide with our own, that in most instances our criticism, if we should offer it, would tend to degenerate into eulogy rather than into contradiction.

The highest praise we can give the work (and we give it most heartily and conscientiously) is to express a wish that Mr. Holmes's volume might be republished in this country, and introduced as a text-book into every medical school in our land. It is the only special treatise attainable upon a most important subject, and we venture to predict that it will be many years before it will have a rival, at least in our own language.

The Messrs. Longman have done their part as publishers, in a manner worthy of the highest commendation. J. A., JR.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XVII.—*Guy's Hospital Reports.* Edited by C. HILTON FAGGE, M. D., and ARTHUR E. DURHAM. Third Series, Vol. XIII. 8vo. pp. xvi., 538. London: John Churchill & Sons, 1868.

THE present volume of this most valuable series contains twenty-two papers, and is adorned with eleven plates (two of them coloured), and one wood-cut. We propose to furnish our readers, as usual, with a brief analytical and critical notice of the various papers embraced in the volume before us, grouping together first those of especial interest to surgeons, and secondly such as refer more particularly to practical medicine.

I. *A Second Case of Pharyngotomy for the Removal of a Foreign Body Impacted in the Pharynx.* By EDWARD COCK.

The patient was a soldier, who, while asleep, swallowed a tooth-plate which he had been in the habit of wearing, though it had lost the artificial teeth which had been originally attached to it. The size of the plate, as shown by the wood-cut, appears to have been an inch and a half by about three-fourths of an inch. Its material was silver. The accident occurred during the night of June 29th–30th, and after several ineffectual attempts to remove the foreign body had been made by the regimental surgeon, the patient left the camp and came to London. Here he applied to Mr. Cock, who immediately sent him to Guy's Hospital, where he was admitted on the afternoon of July 2d. As he had taken no food for more than seventy hours, Mr. Cock passed a large flexible catheter down the œsophagus by the side of the plate, and was thus enabled to introduce a few ounces of milk into the patient's stomach. The operation of pharyngotomy was performed the next day. The various steps of the operation are clearly described. The after-treatment consisted principally in the administration of food, which was accomplished by means of the stomach tube, assisted by nutrient enemata. In the present case, the operation entailed no loss of voice upon the patient; this Mr. Cock attributes to his having opened the pharynx as far back as possible, thus avoiding, as he believes, all filaments of the recurrent laryngeal nerve. We would refer our readers to the excellent notice of Mr. Cock's first case of pharyngotomy, to be found in the review of vol. iv. of *Guy's Hospital Reports* (1858), in the number of this Journal for April, 1859. We may add that in the criticisms there made we entirely coincide.

II. *Clinical Lectures Delivered at Guy's Hospital during the Winter Session*, 1866–67. By JOHN HILTON, F. R. S.

This paper is of the greatest interest and practical value; it embraces reports of five lectures, which we propose to examine somewhat in detail.

The first lecture gives the history of a fatal case of rupture of the left kidney, attended with hæmaturia. Following the daily report of the progress of the case we have Mr. Hilton's comments, in which he recapitulates the symptoms, shows how the diagnosis was arrived at by exclusion, and gives the reason for the adoption of each portion of the treatment. Some most important remarks are added upon the *diagnostic value of clots of blood.* "Most surgeons," says Mr. Hilton "throw away any clot that may happen to come from the invalid; but I would suggest to you never to do so until you have thoroughly examined it. Even if there is only one single confused mass, like that blocking the eye of the catheter in our present case, I advise you to swim it out in water; the shape that it then assumes may be of great help towards your diagnosis, for it will most likely exhibit the well-known form of the space that contained it during its coagulation." In the case in question, some of the clots had been evidently

formed in the pelvis of the kidney, while others had derived their shape from coagulation in the ureter.

In the second lecture the subject of the diagnostic indications afforded by blood is continued, in the instances respectively of hemorrhage from the urethra, the rectum, and the stomach. If in attempting to micturate, blood escapes *before* any water passes, the hemorrhage is from the urethra, since blood never, or at least very rarely, flows backwards into the bladder. The exceptions are in cases of disease of the third lobe of the prostate, of false passages penetrating to the bladder, or of paralysis of the bladder and urethra, when the latter acts as a dead tube merely, and there is of course no impediment to the retrogression of at least a portion of whatever blood may be effused.

By applying the same rule as to the examination of clots, much useful information may be derived in cases of hemorrhage from the rectum. *Vomiting of blood* does not necessarily imply any lesion of the stomach. Blood is of itself, an emetic; and hence after any operation or injury in which blood is swallowed, hæmatemesis is likely to occur.

The subject of clots is continued in lecture third, and the proposition is stated that "*a clot of blood destined to arrest hemorrhage may endanger life.*" Several apposite cases are narrated in illustration of this aphorism, of which we will quote but one: "A surgeon opened a carbuncle freely in the afternoon, and ordered the nurse to apply a warm poultice, taking care not to remove any clots of blood, as they would prevent more bleeding, adding that he would call again next morning. On going next day to the house he found the shutters all closed, and his patient a corpse. The nurse informed him that 'the carbuncle bled after he left the house, forming large clots on poor master's back, which increased in size in the night, and he died this morning about four o'clock.'"

On the other hand, *a clot of blood may save life* by plugging wounded blood-vessels, and if the surgeon find that in any case the hemorrhage has positively ceased, he should be very cautious about disturbing the clot, which in this instance has served a good purpose.

Finally, "*a clot of blood may interfere with the success of a surgical operation, by preventing the union of wounds.*" Hence if primary union of a wound is aimed at, all bleeding must be arrested before the wound is closed.

Leaving the subject of clots, Mr. Hilton takes the history of a case of simple fracture of the tibia, complicated with the existence of a *loose cartilage* in the knee-joint of the affected side. The plan recommended for the treatment of this troublesome complaint is to keep the knee-joint constantly straight by means of a back-splint or other apparatus, and to endeavour to fix the floating body in one position in contact with the synovial membrane, by adhesive strips or some similar contrivance. By this plan Mr. Hilton has several times been able to obtain gradual absorption of the foreign body, and his method has at least the great advantage of perfect safety to the patient.

Three cases are embraced in lecture fourth; one of extraneous bodies floating in the thecæ connected with the tendons of the fingers, one of a long-standing ulcer on a stump cured by rest, and one of arrest of repair in a stump, benefit being obtained from division of surrounding nervous filaments.

The first case Mr. Hilton uses with his customary skill for the purpose of warning his hearers not to interfere with thecæ of tendons, or with bursæ situate close to, and especially if communicating with joints, unless other methods of treatment have already failed. Our author makes no reference to the treatment of such cases by injections of tincture of iodine, as successfully practised by the lamented Velpeau. (See notice in number of this Journal for October, 1867, page 514.)

Two cases are given in lecture five: the first of simple fracture of the femur, with extensive laceration of the integument followed by tetanus, the case recovering; and the second of lacerated wound over the knee, suppuration occurring in the joint, and the femur and tibia becoming anchylosed in a good position. Mr. Hilton's remarks upon these cases are characterized by the same judicious reasoning and practical common sense which are so obvious in all his published clinical lectures.

We consider the lectures which we have just had under review to be models

of their kind, and could wish that all gentlemen who hold posts as clinical teachers would recognize that the duty of a bedside lecturer is not to prove his theories of pathology by the exhibition of picked cases, nor, on the other hand, to show a mere succession of isolated cases of greater or less intrinsic interest, but to teach his hearers how to study and reason out their cases for themselves; not making facts mere illustrations of theory, nor yet forgetting that bare facts are almost sure to be either forgotten or misinterpreted.

IV. *On Acupressure.* By J. Cooper Forster.

This is an interesting paper, adorned with a lithographic plate, and gives the details of thirty-one cases (mostly amputations) where bleeding was controlled in one or other of the various plans recommended by Sir James Y. Simpson and his followers. The method preferred by Mr. Forster is essentially the fourth method of the Edinburgh professor, substituting, however, a "well-waxed silk ligature or fishing gut" for the flexible wire used by Simpson. We have not found any facts or arguments in Mr. Forster's paper which throw additional light upon the acupressure controversy, and we see no reason to alter the opinion we expressed in noticing the essay of Prof. Pirrie and Dr. Keith in the number of this Journal for July, 1867. We greatly doubt whether the volumes of *Guy's Hospital Reports* which may be published fifteen or twenty years hence will confirm the praise given to acupressure by Mr. Forster in the following words, with which he concludes his paper: "For my own part I have quite decided in its favour (for the reasons I have given), and never intend again to use a ligature in any case where the edges of a wound are brought in apposition with a view to their adhesion. That some more simple plan than that of the pin and wire may be substituted I fully believe, and shall be most happy to cast them aside, as I now do the ligature, when such contrivance shall have been suggested; until that time arrives I shall continue to use acupressure as at present applied, in lieu of the ordinary ligature, with the same feeling that prompted the use of that means of arresting hemorrhage, instead of the hot iron, for I consider it as great an advance on the ligature as the ligature on the cautery."

V. *Report of Forty-one Cases of Uterine Polypi, with Remarks.* By J. Braxton Hicks, M. D., F. R. S.

These polypi were of various kinds and of different sizes. "They have, however, this in common, namely, that they were all treated by the plan of immediate separation, and all removed by the annealed steel wire rope écraseur, described by me in these reports in 1861, and in the *Obst. Trans.*, London, 1862. They also have these points in common, as regards the results, that no death occurred, and the removal was not followed by hemorrhage, nor by symptoms which gave any anxiety, excepting in two instances."

Dr. Hicks's remarks upon the treatment of this troublesome class of affections are lucid, and, we think, judicious. A careful study of the appended cases will be of service to any who are interested in this important department of uterine surgery.

VI. *Observations on some of the Affections classed as Nervous Deafness.* By James Hinton.

This is a valuable paper, giving details of twenty-three cases. With regard to the signs by which any particular case of deafness may be inferred to depend upon an affection of the nervous system, we find the following remarks:—

"1. The history. This is, in many cases, of itself decisive, especially when it connects the defect of hearing with other nervous derangements. . . . The history, however, may be very misleading if too much relied upon; some of the most marked forms of nervous deafness, especially those of sudden origin, being liable to be closely simulated by simple mechanical obstructions. Among the most frequent causes of nerve-deafness, besides blows on the head, and the effect of extremely loud or long-continued noises, are fever, sunstroke, mumps, diphtheria, parturition, prolonged residence in India. Convulsions in childhood stand as the origin of many cases, but it is a question whether, in a large proportion of these, the convulsive seizures have not been an effect of the ear-disease.

"2. Certain peculiarities of the hearing, such as the hearing better in a noise

(as when riding), or hearing worse on excitement, depression, or fatigue, or on any special attempt to listen. A much better hearing for some sounds than for others, as, for example, for the watch as compared with the voice, is a suspicious circumstance; so also is a great diminution of the hearing on inflating the tympanum. . . . .

"3. A certain value attaches to the degree of deafness, which, if it be very excessive cannot depend on absence of conduction; but it is difficult to draw the line. It seems certain that *disease* of the conducting apparatus may reduce the hearing to a lower pitch than its congenital absence necessarily involves.

"4. Certain tests can be applied to the hearing by means of a tuning-fork placed on the head, which will sometimes give almost or quite decisive information. . . . An inability to hear vibrations thus imparted to the cranial bones may be fairly held a suspicious circumstance, and at least the converse may be held valid, that if the tuning-fork be well heard, the deafness is not likely to be nervous. But the chief use of the tuning-fork in diagnosis rests on the simple fact that its vibrations, when imparted to the bones, *pass outwards* freely through the tympanum and external meatus, and are therefore reinforced by reflection when either the tympanum or the meatus is rendered impervious to sound. . . . . It may, indeed, be laid down as fairly ascertained that whatever diminishes the permeability of the tympanum or meatus for sonorous vibrations causes the bone-conducted sounds to be, *cæteris paribus*, better heard." If the tuning-fork applied to the cranial bones is heard *best*, therefore, with the *deaf* ear, the disease is seated in the conducting media; if, on the other hand, it is heard *worst* with the deaf ear, the case is one of nervous deafness.

Mr. Hinton further states that there is a certain aspect or manner about patients afflicted with nervous deafness which is of value in a diagnostic point of view. As, however, it is too variable as well as too delicate to be defined in words, we must be content to leave it as he does, undescribed.

"The disease from which it is most difficult to distinguish a nerve-deafness is undoubtedly 'anchylosis,' bony or membranous, of the stapes; or it is, perhaps, better to say rigidity of the ossicula resulting from any cause which does not leave palpable marks of its presence on the membrana tympani. It is in cases of this kind that the tuning-fork is so useful. Whatsoever condition of the tympanum prevents the inward, surely prevents also the outward, passage of vibrations, and will therefore, in like manner, prevent the increase of sound on closing the meatus, which depends on this outward passage. If, therefore, we suspect anchylosis in any case, but find that the natural increase of sound ensues on closing the meatus, the strong probability is that anchylosis is not present. If no effect follows, there is most probably obstruction to the passage of vibrations through the tympanum, though this, as will be seen hereafter, is not quite certain; and it then remains for judgment whether there be, besides such obstruction, any implication of the nervous system."

IX. *A Case of Intestinal Obstruction in which the Operation of Colotomy was performed, and twice repeated.* By JOHN HILTON, F. R. S.

This was a very remarkable case. The patient was himself a medical man, and had suffered from abdominal pain and constipation for some time before the obstruction to defecation became complete. After twenty-eight days Mr. Hilton saw him in consultation with Mr. Hancock and the late Dr. Jeaffreson, and they decided that the disease was in the upper part of the rectum or the sigmoid flexure, and that the colon should be opened in the left loin. Four days after the operation, evacuations began to pass *per anum*, and so continued for eleven weeks, the wound of colotomy having in the meanwhile closed. At the expiration of this time "all the worst symptoms returned without there having been any apparent cause for this unfavourable change." The colon was now reopened, a proceeding which was greatly facilitated by the adhesion of the bowel to the cicatrix of the former operation. As on the previous occasion, the bowels were relieved in the natural way on the third day. Great efforts were used to prevent the artificial opening from closing as it had previously done, but without avail; and in about three months the wound had for the second time healed. This time the patient's condition was so much improved that he was enabled to resume his practice, visiting as many as thirty families in the day. After a while,

however, his strength began to fail; he became emaciated, and it was evident that deep-seated suppuration was taking place. From this period the patient's condition gradually became worse. The symptoms of obstruction returned, and it became necessary to perform colotomy for the third time. A large abscess was also opened below Poupart's ligament. The patient died from exhaustion almost a month subsequently. A *post-mortem* examination showed that the original disease had been an annular stricture of the gut about nine inches above the *sphincter ani*. This stricture was not, however, the immediate cause of the obstruction, for it readily permitted the passage of the finger. "The colon above the stricture was found to be bent upon itself, and thus to dip down into the pelvis. . . . . It seems to me that the course of events was as follows: The stricture first interfered with the passage of the motions and caused the contents of the intestine to accumulate behind it. The bowel above consequently deviated more and more from its natural position, and became bent on itself until it formed a sharp angle, which prevented entirely the discharge of its contents. When, however, the bowel had been opened by operation its distension was at once relieved, and it then became possible for the feces to pass on towards the anus. Thus the evacuations were discharged in the natural way so long as the wound remained open. When this closed, the same series of events was repeated."

The stricture was of a non-malignant character. It contained no new tissue-elements, but "appeared to be made up simply of the circular non-striated muscular fibres of the intestine, aggregated together, so as to form a cord-like mass."

This paper is illustrated with a lithographic plate.

XIV. *Case of Excision of the Spleen for an Enlargement of the Organ, attended with Leucocythæmia; with Remarks.* By Thomas Bryant.

The patient was a woman, forty years old, who had been obliged to leave her situation as housemaid on account of increasing debility, about six weeks before the date of the operation. The excision of the spleen was not attended with any difficulty, but the patient died from hemorrhage within fifteen minutes from the time of her removal from the operating table. In Mr. Bryant's previous case, it will be remembered, the patient did not bleed to death for two hours. [See notice in No. of this Journal for April, 1867, page 494.]

In both cases the majority of the glands throughout the body were affected in a manner similar to that which characterized the spleen.

"We have thus learnt," says Mr. Bryant, "two things from the cases related.

"Firstly, that the enlargement of the spleen in leucocythæmia appears to be only part of a general disease affecting the glandular system as a whole; and secondly, that in splenotomy for such a disease there is a disposition to hemorrhage with which surgery is incompetent to deal. It can neither be foreseen by any amount of care, nor coped with by any amount of skill.

"Under such circumstances there is no shirking the conclusion that the operation is physiologically unsound and surgically unsafe, and for leucocythæmia should not be performed."

We doubt not that our readers will readily coincide with this conclusion, and will join us in the hope that no surgeon may hereafter think it necessary to verify Mr. Bryant's results by a repetition of his experiments.

XV. *Cases of Malposition of the Testicle and of Malformation of the Male and Female Urino-genital Organs.* By Thomas Bryant.

This paper gives brief notes of twenty-three cases, and is illustrated with two lithographic plates. Several instances are mentioned in which the deformity of hypospadias was transmitted from parent to child. The usual position of the urethral orifice in hypospadias is, as stated, at a point corresponding to the preputial frænum. It may be partially concealed by a fold of the frænum, a fact which should always be borne in mind. We were asked, some years ago, to see a case of supposed impermeable stricture situated immediately within the meatus: the smallest probe could not be made to enter the urethra, and preparations had absolutely been made for urethrotomy. Some unusual appearance about the attachment of the frænum induced us to suggest to the physician in attendance that it might be a case of hypospadias, and such indeed it proved

to be; whether the patient was himself ignorant of his deformity, or whether he was aware of it but preferred to submit to an operation rather than make known a peculiarity of which he may have been ashamed, is uncertain: the incident is mentioned here to show the importance of bearing in mind the possible existence of hypospadias in any case such as that described, as the surgeon may perhaps thereby be saved not a little mortification and annoyance.

XVIII. *Cases of Intestinal Obstruction.* By JOHN BIRKETT.

These cases are two in number, and are both of considerable interest. The first was a case of "intestinal obstruction caused by intussusception of the transverse colon, and complicated with irreducible omental hernia in the scrotum." In this case, which Mr. Birkett did not see until the eighth day of the obstruction, it was thought proper to perform herniotomy in view of the possibility of a portion of gut being involved in the tumour, though Mr. Birkett was disposed to think, what the operation revealed, that the contents of the sac were omental merely, with a little serum. This case may be compared with Mr. Bryant's, in which the obstruction was from a fibrous band, successfully treated by operation. [See No. of this Journal for July, 1867, page 263], and with Dr. Agnew's, reported by Dr. T. H. Andrews to the Philadelphia Pathological Society, at their meeting of March 14th, 1866. [See No. of this Journal for January, 1867, page 149.] The second case is of "intussusception of the ileum occurring whilst the patient was suffering with a simple surgical complaint (erysipelas)." Both of these cases terminated fatally, and the post-mortem appearances in either are carefully described.

XIX. *The Results of the Operations for the Removal of Stone from the Human Bladder, performed in Guy's Hospital during the Last Ten Years.* By JOHN BIRKETT.

This is an extremely valuable paper, and is based upon an examination of 162 cases of vesical calculus that were submitted to operation in Guy's Hospital, from 1857 to 1866, inclusive. All but two were males. The youngest was one year of age; the oldest seventy-seven. The total number of deaths was twenty-five. Several tables are given, showing the rates of mortality at different ages, the rates of mortality at different epochs of life, the causes of death after lithotrity, the causes of death after lithotomy, and the duration of symptoms and the ages in successful cases of either operation respectively.

Of 103 cases under fifteen years of age, in all of which lithotomy was performed, but four proved fatal. Of 59 cases, sixteen years old and upwards, lithotrity was performed in twenty-five with five deaths (20 per cent.), and lithotomy in twenty-six with twelve deaths (46.15 per cent.), while in five cases, lithotrity having failed, lithotomy was subsequently resorted to with the mortality of three (60 per cent.).

It would, however, be unfair, as very justly remarked by Mr. Birkett himself, to infer from these statistics that the mortality after lithotomy is more than twice as great as after lithotrity, and that hence it should be rejected as an ordinary operation. To further illustrate this point we have taken the trouble to extract from Mr. Crosse's prize essay, published in 1835, when lithotrity was just coming into notice through the labours of Baron Heurteloup and others, the results of all the cases tabulated in his splendid work, of patients twenty years old and upwards, who submitted to lithotomy.

The figures stand as follows: During ten years at Guy's Hospital, lithotrity having been performed wherever it was thought at all practicable, the number of cases over twenty years of age submitted to either operation has been fifty [see Table I., page 473]; of these twenty proved fatal, a mortality of 40 per cent. At the Norfolk and Norwich Hospital, lithotomy alone being practised, there were 317 cases over twenty years old submitted to operation; of these but sixty five died, giving the comparatively small mortality of 20.5 per cent. [See Crosse's Treatise, etc., London, 1835, Table III., page 162.]

These comparative statistics, it will be seen, tell a very different tale, and while we are perfectly ready to acknowledge the preferability of lithotrity to lithotomy in *certain selected cases*, we must decline to take the view not unfrequently advanced of late years, that *cutting* for stone is a thing of the past, and

that the patient whose calculus is not submitted to *crushing*, does not receive justice at the hands of his surgeon.

We would gladly dwell upon many other points brought up by Mr. Birkett's most interesting communication, but our limits compel us to be satisfied with giving his conclusions, which we quote in his own language :—

"1. That after an examination of the gross total of the hospital cases submitted to an operation for the removal of a stone from the bladder, the treatment may be regarded as successful in a general point of view.

"2. That in the early periods of life, before puberty, lithotomy may be performed with almost a certainty of success.

"3. That the operation for the removal of a stone from the bladder of adult patients admitted into hospital is attended with increasing risks to life as age advances.

"4. That the adult patients afflicted with stone do not generally seek the surgical assistance provided in an hospital until after the disease has existed for many years.

"5. That in consequence of that delay many cases are precluded from the advantages derived from the operation of lithotrity.

"6. That upon adults the operation of lithotrity was more frequently performed than lithotomy.

"7. That lithotrity in select cases was a successful operation.

"8. That in the class of patients operated on, lithotrity was followed by active organic disease of the kidneys, which was the cause of death.

"9. That the risks of both the operations increase in proportion to the length of time the stone has been forming in the bladder.

"10. That the mere fact of the duration of the disease does not preclude a successful result after lithotomy.

"11. That the immediate cause of death after lithotomy is disorganization of the kidneys and the effects thereof.

"12. That lithotomy may be attended with success, in some cases, when lithotrity, from specific local conditions, is not practicable.

"13. That patients cured by lithotrity were able to leave the hospital sooner than those upon whom lithotomy was performed."

The only fatal case met with under five years of age was in a child who was markedly affected with what is called the hemorrhagic diathesis; his case is made the subject of a special report by Mr. Durham, who performed the operation, and a notice of it will be found in the latter part of this review.

XXII. *The Human Eye in Health and Disease, as seen with the Ophthalmoscope* (Second Series). By C. Bader.

The previous series was published in the volume of Reports for 1865, and was noticed in the number of this Journal for April, 1866, page 496. Mr. Bader's papers are scarcely *clinical* enough in tone to be entirely appropriate among reports of hospital practice, but they are valuable in themselves, and are particularly admirable on account of the very beautiful coloured plates with which they are illustrated. The present series contains two plates, showing in six figures the ophthalmoscopic appearances of the healthy optic nerve (optic disk) and a small portion of the tunics adjoining it, in the fair, the brown, and the dark eye respectively. J. A., Jr.

We shall now notice the medical papers contained in this volume.

III. *Affections of the Nervous System dependent on Diseases of the Permanent Teeth.* By S. James A. Salter, M. B., F. R. S.

The nervous derangements to which caries, exostosis, or other diseases of the permanent teeth give rise, is the subject of this paper, which will be found to be one of great interest. The derangements which are thus caused are divided by Mr. Salter "into those which are reflex, secondary, and remote; and those which are direct, immediate, and from contiguity. In the former category would rank epilepsy, neuralgia, paralysis; in the latter, local pain, facial palsy, some forms of amaurosis, etc." Attention is directed by Mr. Salter to the abundant supply of nerves which the teeth receive, the proximity of the lower molars to the auditory passage, and of the upper molars to the orbital cavity and its con-

tents, and to the spheno-maxillary fossa and fissure; it is, therefore, not surprising, he thinks, that serious functional disorder has been the consequence, in many cases, of diseases of the teeth. The diseases of the teeth capable of producing pain, muscular spasm, muscular paralysis, paralysis of some of the nerves of special sense, and perverted nutrition, are caries, with or without exposure of the pulp, exostosis, hypertrophy of the crusta petrosa, nodular development of dentine in the pulp cavity, periostitis, whether plastic or suppurative, impaction of permanent teeth in the maxillary bones, and crowding of the teeth from insufficient room. The direct affections, on the other hand, are caused generally by the entanglement of the portio dura of the seventh pair, or of one of the nerves, which enter the orbit by those inflammatory operations and products which tooth diseases engender.

The paper contains the report of 23 cases; 17 of these Dr. Salter believed to be due to reflex irritation and 6 to direct. In the introduction to this paper Mr. Salter says very pertinently that while much has been written about the diseases incident to the first dentition, there is little or nothing in medical literature in regard to diseases caused by imperfections of the second teeth. These diseases are facial neuralgia, cranial neuralgia, general neuralgia, trismus, wry neck, epilepsy, tetanus, paralysis of the arm, amaurosis, deafness, perverted nutrition, superficial sloughing of the cheek, and ulceration of the neck. An interesting case of amaurosis due to the irritation caused by a carious tooth and cured by its extraction, will be found reported in the number of this Journal for April, 1868, p. 382, and the writer of this notice has known a case of violent neuralgia relieved by the removal of a tooth on the fang of which was found a small exostosis.

VII. *Cases of Elephantiasis Græcorum; with Remarks.* By G. OWEN REES, M. D., F. R. S.

This paper contains the report of two cases of this terrible disease, and is introduced, the author tells us, as the cases are illustrative of the two following points:—

1st. That leprosy in its worst forms may be developed in England.

2d. That anæsthesia may be as marked a symptom in the tuberculated form as in the non-tuberculated.

Dr. Rees thinks that the nomenclature proposed by the Committee of the Royal College of Physicians should be adopted, *i. e.*, tuberculated and non-tuberculated elephantiasis. He is disposed to classify this affection among the blood diseases, for he says: "The manner in which it destroys tissue, the fact that it is characterized by deposit, and that its action is capable of extending over the whole organism would seem to point to this conclusion." He likewise regards the fact that leprosy prevails in districts in which fish and salt provision, sometimes more or less putrid, are eaten as corroborative of this view; as do also Dr. Carter and Messrs. Steinhaüser and Shepherd.

VIII. *On Certain Rare Cutaneous Affections.* By C. HILTON FAGGE, M. D.

Dr. Fagge is well and favourably known in this country by his excellent translation of Hebra's work on *Diseases of the Skin*, and this and Article XI., which is also contributed by him, bear evidence that he is a learned dermatologist. The student of cutaneous medicine at Guy's, possesses a great advantage in the collection of models of skin diseases for which the hospital is noted, for when he sees a rare form of disease he can compare it with analogous or similar forms in the museum.

The diseases which are discussed in this paper are: 1. Circumscribed Gangrene of the Skin. 2. Psoriasis Rupioides. 3. Eczema Squamosum Universale seu Pityriasis Rubra. 4. Acne following Variola. 5. Acne Cornea. 6. Recurrent Acute Eczema.

The patient who suffered from circumscribed gangrene of the skin was under the care of Dr. Habershon, was fifty years of age, had had syphilis, and presented the physical signs of consumption. The first symptom of the disease appears to have been a sense of tightness in the legs, which was followed by the appearance of purpuric spots on the lower extremities, and these patches of purpura became gangrenous at the end of a few days, the mortification appearing to commence at the centre of the patches and to extend afterwards towards

their circumference, so that at last the patches assumed a dry shrunken appearance. In a case similar to the above, reported by Dr. Rooke, under the name of erythema gangrenosum, the question arose in the minds of the attending physicians whether the disease could have been intentionally set up by the patient herself, and this view was adopted by Dr. Tilbury Fox, who said that the appearances described might be induced by reblistering a blistered surface, or by applying to it a strong acid. In Dr. Habershon's case the spontaneous nature of the affection could not be doubted. Dr. Fagge says the remarkable symmetry observed in all recorded cases leads to the belief "that the affection is immediately due to some defect of nervous influence, and, possibly, to some morbid state of the ganglionic system of nerves." No treatment that has been tried in these cases has been successful.

In the second variety of disease, which Dr. Fagge proposes to call psoriasis rupioides, after Dr. McCall Anderson, the scales assume "the shape of large conical crusts marked by concentric rings." The name we think is an unfortunate one, as Dr. Fagge himself admits, for the disease merely presents some resemblance to rupia; it does not at all present any evidence of a union of two diseases such as is seen in eczema impetiginoides, for example. The disease does not appear to require a modification of the usual treatment.

The third variety is a disease which has been described by various writers under different names; perhaps the name of pityriasis rubra is that which is most frequently given to it. We think, however, that this name is not entirely correct, as the disease is accompanied by a slight exudation which differs, in some of its characters, from that observed in the different varieties of eczema, and that the name eczema squamosum is equally objectionable. A better term is that proposed by M. Hardy, "pemphigus foliacé" for this disease resembles pemphigus both in its intractability and in the character of the liquid exuded.

The fourth variety is an acne which occasionally follows an attack of variola. This is apparently not frequently met with, as the only author by whom it is mentioned is Hebra. It is not difficult to understand that smallpox should in some cases occasion great irritation of the sebaceous follicles.

To the fifth variety attention was first called by Cazenave, and it has since been more accurately described by Hardy in the following terms: "This affection presents itself in the form of yellowish, gray, or black eminences, pointed, and giving to the touch the sensation of a rasp or a brush. By pressing at the base of these little tumours, they may be made to project still more, and sometimes they may be squeezed out, when the open orifice of the sebaceous follicle becomes visible, and shows what was their seat, and in what way they were produced."

The disease described as recurrent eczema appears to us to be nothing more than the ordinary eczema rubrum, the outbreak of which is frequently accompanied by general symptoms of some gravity, such as were noted in the case reported by Dr. Fagge. The recurrence seventeen days after the first attack does not seem opposed to this view, nor to justify the establishment of a new class.

X. *Cases and Observations in Medical Jurisprudence.* By Alfred S. Taylor, M. D., F. R. S.

This paper contains the history of three cases of poisoning: 1st. By Carbolic acid; 2d. By Cyanide of Potassium; 3d. By Phosphorus.

In the first case a child 21 months old swallowed about two teaspoonfuls of carbolic acid, which had been placed in a saucer, under a bed, for the purpose of disinfection. She was brought at once to the hospital and was seen within ten minutes of the accident by Mr. Henry Taylor, the house surgeon. At that time the following symptoms were noted: pulse, 120; pupils very much contracted and insensible to light; skin cold and clammy; lips blue and respiration very much impeded; a tarry odour was perceived in the breath; she had vomited a little frothy fluid.

The respiration was so much interfered with that it was deemed advisable to perform tracheotomy, which had the effect of enabling the child to breathe with freedom for a short time, but she sank and died twelve hours after admission into the ward.

The following is the result of a post-mortem examination: About the mouth the skin was brown, dry, and shrunken. The interior of the mouth and the œsophagus were very much whitened from the local effects of the acid, the bronchi contained a brown, red, thick mucus which smelt strongly of tar and obviously contained blood. The mucous membrane was pinkish red, and in one spot was covered with diphtheritic membrane. The trachea presented the same appearances as the bronchi, with the addition, of course, of the wound made by the operation.

The change in the walls of the stomach "consisted in raised red-based patches with red borders; they were generally small, but confluent in places, and mostly limited to the summits of the rugæ. The surface of these patches was as though diphtheritic, *i. e.*, on it was a dryish pellicle." The microscope showed that "the superficial layer of the mucous membrane was destroyed, and in points separated, and the dead part showed all its structures perfect, their outlines being rendered very sharp by what may be called a process of cornification, so that every epithelial cell had a horny looking outline, whether seen from the side of it or from the top." In conclusion he says, "that no inflammatory formation existed was thus proved by microscopic examination."

In the second case, a gentleman took by mistake about three grains of cyanide of potassium in solution. Fortunately he at once discovered his error, and seeing on his table a saturated solution of the proto-sulphate of iron, immediately swallowed an ounce and a half of it; he then went to the nearest druggist's, where he obtained a mustard emetic, which brought up matter light blue or greenish in colour. The gentleman, as a consequence of this prompt treatment of himself, recovered perfectly in a few days, the only symptoms complained of being slight constriction about the throat and fauces and some muscular tremors. Dr. Taylor attributes the escape of this person from the effects of the poison to its rapid neutralization by means of the proto-sulphate of iron, by which it was converted into the inert Prussian blue.

In the third case, a girl, æt. 12, took, or had administered to her, it is uncertain which, a quantity of phosphorus paste (rat poison). During life the same symptoms were present, and after death the autopsy revealed the same lesions as occurred in the two cases reported in the *Med.-Chir. Trans.* for 1867, and of which an abstract was given in the April number of this Journal for this year, p. 492.

XI. *On Keloid, Scleriasis, Morphœa, and some Allied Affections.* By C. HILTON FAGGE, M. D.

This is another valuable paper from the pen of Dr. Fagge, and we regret that our space does not permit us to notice it more in detail. From careful observation of a case of the disease described by Dr. Addison, under the name of keloid, and a careful comparison of this with models taken from Dr. Addison's patients, two of whom he had an opportunity of seeing while at work on this paper, Dr. Fagge is inclined to think that the keloid of Addison is an essentially distinct disease from the keloid of Alibert, and closely allied to sclerema, or scleriasis, as Virchow has preferred to call it. In the two patients of Addison whom Dr. Fagge visited, many of the appearances described by the former were found no longer to exist; although much deformity was present in both cases, in consequence of the contraction of the skin.

Under the term morphœa is described a disease of which Dr. Fagge has been able to collect five cases. The following is the history of one of the cases: The patient was about fifty years of age, and first noticed the disease in consequence of the hairs over the part affected becoming snowy white and subsequently falling out. He then noticed a yellowish white patch on the forehead at the roots of the hair, which was slightly raised above the surrounding skin. This patch, as the disease progressed, became depressed and brownish in colour. In the four cases in which the position of the patch is noted, it is a little singular that it should have been on the left side. Dr. Fagge calls attention to the fact that the disease occupied exactly the tract of distribution of the first branch of the facial nerve. Notwithstanding the fact that this disease presents some points of resemblance to scleriasis, our author looks upon them as entirely distinct, and he also controverts the opinion that scleriasis and morphœa are but leprosy, modified by time and climate.

In regard to the causes of these affections nothing new is told us, and the same remark is true of their therapeutics. The microscope shows that the pathological anatomy of the disease consists in an excessive development of the connective tissue cells.

XII. *A Contribution to the History of Visceral Syphilis.* By W. Moxon, M.D.

Attention has of late been called by Dittrich, and more recently by Wilks, Bristowe, Reade, and others to the fact that the syphilitic diathesis is capable of inducing a peculiar degeneration of some of the internal organs. The possibility of this, although denied by John Hunter and Sir Astley Cooper, appears to have been well known to some of their contemporaries. In a work entitled *Practical Observations on the more Obstinate and Inveterate Venereal Complaint*, published in 1784, Schwediauer refers to a case reported by Brambilla, in which a patient, supposed to be suffering from phthisis, took by mistake mercurial ointment, with the effect of entirely relieving him of his trouble, which was afterwards found to depend upon a venereal taint. He also refers to cases reported by Werlhof, of intermittent (?) fever dependent upon constitutional syphilis, and cured by the employment of mercurials. Twenty-seven cases of visceral syphilis are reported by Dr. Moxon in this paper. The cranium and spine were found to be diseased 8 times; the brain, 3 times; the pharynx, 4 times; the rectum, 2 times; larynx or trachea, 10 times; the lungs, 11 times; the spleen, 10 times; the kidneys, 12 times; the testes, 9 times; the Fallopian tubes, 4 times; the tibiæ, 5 times, and the liver, 22 times. Dr. Moxon believes that he reports in this paper the first case in which the peculiar deposit characteristic of visceral syphilis was found in the kidney, the other cases of disease of the kidney being simply instances of lardaceous degeneration.

The disease of the liver and spleen which is regarded as peculiar to syphilis, consists in the deposition of a cheesy looking material within the substance of these glands. The deposition is believed to be due essentially to an excessive growth of the connective tissue of the part: its subsequent degeneration and contraction produce the appearance of a radiated cicatrix on the surface of these glands. So far as is known, there is no peculiar microscopic appearances attached to these deposits. In one case the report says: "The microscope showed only a few old nuclei and many broken ones, with fat grains and molecular debris; the tissue in which these were imbedded being clouded with these grains, and itself of no discoverable structure; it appeared to be the remnant of obsolete liver tissue."

Dr. Moxon says, in conclusion: "One principal fact which I wish to draw attention to is, that the foregoing twenty-six cases include all the examples of the particular kind of hepatic disease described in them, which in the course of 900 inspections I have met with. In other words, whenever, at any parts of the liver, there have been depressed fibrous cicatricial spots, with or without gummous formation, and with adhesion to the contiguous part of the neighbourhood of the organ, there have also been present other conditions of a kind such as to give satisfactory proof that the person was syphilitic. . . . . Two other conditions there are which might be taken for the syphilitic scar; one is a local thickening of the capsule, without depression, and without wasting of the tissue. Another, is the branching atrophy of the tissue around the superficial portal veins, producing ramose white seams, but *not depressed*. . . . . Yet a third state may be noted, wherein one or two small, yellowish, generally calcareous nodules are found at or near the convex surface of the liver. These are the only representatives of the described parasitic action of the pentastoma denticulatum which I have met with, and I have never seen the parasite in them." This paper is accompanied by two plates.

XIII. *Note on a Case of Melanuria.* By Thomas Stevenson, M. D.

The urine, in the case reported by Dr. Stevenson, was passed just before her death, by a woman whose thigh had been amputated in consequence of an osteo-sarcomatous tumour. She was said to have had an attack of scarlatina a few days after the operation, but this was doubted by some of her attendants. Previous to the passing of the black urine the stump had been dressed with a strong solution of carbolic acid; and Dr. Stevenson says that it is somewhat

remarkable that in all cases in which true black urine has been passed, either wood or coal tar creasote—both of which contain carbolic acid—have been administered either internally or externally. The urine was first tested for blood, but none was found; it was then determined to seek for indigo, but although a careful analysis of the urine was made, no evidence of its presence could be detected. Potassa appeared to dissolve the pigment with the production of a rich, brown colour; but when this solution was treated with grape sugar no indigo blue was deposited. Dr. Stevenson, as the result of a careful investigation, declares his inability to state positively to what the urine owed its colour. It will be recollected in the case of poisoning by carbolic acid, reported by Dr. Taylor in this volume, a black colour of the urine was not mentioned as one of the symptoms.

XVI. *On the Guaiacum Process for the Detection of Blood in Medico-Legal Cases. The Antozone Test.* By ALFRED S. TAYLOR, M. D., F. R. S.

This test is not altogether new: it was originally suggested by Van Deen, a Dutch chemist, who employed an alcoholic solution of guaiac and what he supposed was ozonized oil of turpentine. Very little attention was paid to it until 1863, when the subject underwent a minute critical examination by Dr. Liman, of Berlin, by whom it was not considered satisfactory; for he says, that while a failure to respond to this test, indicates that there is no blood present, the converse is not true, as he has obtained the characteristic reaction with other liquids. Dr. Taylor, as a consequence of some experiments performed by himself, at first adopted the opinions of Dr. Liman; but having discovered that oil of turpentine is not a good liquid to experiment with, he has recently tried, as suggested by Drs. Day and Schönbein, the peroxide of hydrogen and ozonized ether. It will be noted that ozonized ether contains not ozone but antozone. Two liquids are used, therefore, for the detection of the red colouring matter of the blood: 1. An alcoholic solution of guaiacum resin; 2. A liquid containing not ozone, as Van Deen supposed, but antozone, or peroxide of hydrogen.

There are certain organic and inorganic substances which have the effect of changing to a blue colour the resin precipitated by water from its alcohol solution; and among these may be mentioned all those hyperoxides which contain oxygen in the form of ozone, as manganate and permanganate of potassa, peroxide of lead, and manganese: also bodies which operate through the agency of water as oxidizers, such as chlorine, bromine, iodine, hyponitric acid, and the hypochlorates. Among organic bodies gum, gluten, unboiled milk, exercise this power to a slight extent; while on the other hand boiled milk, starch, fibrin, and the colouring matter of the blood have no effect upon the precipitate, and the same is true of all mineral compounds which contain oxygen in the form of antozone. But while the colouring matter of the blood alone is without action upon the precipitated guaiac, it acquires the property of changing the colour in the presence of antozone; and it is the only substance which not having this property under ordinary circumstances acquires it when antozone is added to it. To discover whether the liquid containing antozone is in a proper condition for use, add to it a few drops of a solution of bichromate of potassa when a blue colour should be immediately produced, in consequence of the formation of perchromic acid.

To test for blood, the following method is to be pursued. Add a few drops of the tincture of the resin to four drachms of water; then add a few drops of the colouring matter of the blood, enough to give a faint red tint; to this a few drops of peroxide of hydrogen or ozonized ether is added; then a blue colour should begin at once to show itself. The liquid containing the antozone should not be added before the suspected liquid, as was done by Dr. Liman, for it would then be impossible to say whether the liquid had itself changed the resin to a blue colour, or whether it had merely done so in consequence of the presence of antozone.

For the detection of blood upon the clothing, Dr. Taylor recommends the following process: The part is first to be wetted with a little water, a little tincture of guaiac is then to be dropped upon it, and then a piece of white blotting paper should be pressed upon the spot; if no blue colour is developed, there is nothing in the material or dye to affect the reaction. Another drop of

tincture of guaiac, and then a few drops of peroxide of hydrogen should be added, and then, upon pressing white blotting paper on the spot, a blue colour will at once show itself on the paper. Dr. Taylor succeeded in obtaining the characteristic reaction in the case of drops of blood which had been on a towel for ten years. This test does not enable us to say, of course, to what kind of animal the blood belongs. Even the red liquid of the common house fly, Dr. Taylor says, will produce the effect above mentioned. Its advantage is, that a small quantity, beyond the application of the ordinary chemical tests, may be detected in this way. In fact, there is no other method which approaches it in delicacy, except that of Mr. Sorby, of Sheffield.

So small a quantity as one drop of blood in eight ounces of water may be detected by operating on one or two drachms. Nor does the admixture of mucus, urine, or other liquid without oxidizing effect upon the blood, render this test inapplicable. Dr. Taylor believes that the colouring matter of the blood acts by converting the antozone into ozone or nascent oxygen, and in this way effects the oxidation of the resin—a property which none of the organic colouring principles resembling blood, possess.

XVII. *Dissections of Acephalous Monsters without Head, Heart, Lungs, or Liver.* By J. Braxton Hicks, M. D., F. R. S., and James Bankart.

Four specimens of this kind of monstrosity have fallen into the hands of these gentlemen, and in the present paper an account of the dissection of two of them is given. The manner in which the circulation is carried on in these cases has, of course, been a subject of much investigation. The contraction of the blood-vessels alone would not account for the propulsion of the blood in a given direction, without the presence of valves. On this subject, Dr. Hicks says: "For, if the fœtus have no propelling organ in itself, it is evident either that it must receive an impulse through its vessels anastomosing in the placenta with those of the other fœtal heart (in the case of a twin conception), or that a circulation akin to the vegetable must obtain in the case of a single fœtus, or in a twin case, where no anastomosis exists."

But one artery and one vein were found in each case. In one case, the artery, after descending to the brim of the pelvis, where it gave off branches for the lower extremities, ascended towards the rudimentary thorax, sending off in its course branches to the intestines and kidneys, and finally divided into three branches, one for each upper extremity, the third for the rest of the upper part of the body. The vein divided into two branches, one of which was distributed to the upper, the other to the lower part of the body. In the other case, the artery descended till it reached the inguinal region, where it sent off a small branch to supply the left leg; it then passed backwards and upwards to the lumbar vertebræ, where it gave off a branch to the right leg. Ascending, it supplied arteries to the kidney, supra-renal capsules, mesentery, and other parts, and finally divided into three branches, which went to supply the upper extremities. The vein had three principal branches; one of these received its branches from the lower extremities, kidneys, mesentery, &c., and then, just as it entered the thorax, joined a second branch which came straight from the umbilicus; at the level of the upper extremities it divided into three branches, which were distributed to the upper part of the body. The other branch was distributed to the left side of the body. No trace of valves could be detected either in the arteries or veins. In each case, at the upper part of the abdominal cavity near the median line, was a round glandular-looking body about three-quarters of an inch in diameter. Its structure appeared to be similar to that of the spleen. No excretory duct could be found, but it was supplied with an artery and vein; it is therefore probable that it represented the spleen. Three plates accompany this paper.

XX. *A Case of the Hemorrhagic Diathesis, with Remarks.* By Arthur E. Durham.

In this case, the patient, a boy of three and a half years of age, had presented symptoms of stone in the bladder for four or five months. His mother, when told of the nature of the operation intended for his relief, expressed her conviction that it would prove fatal. "For," she said, "three of his brothers have bled to death from very little wounds—it is in the family." Notwithstanding the unfavourable nature of the case, Mr. Durham, with the consent of his colleagues,

determined to operate, as it was evident that the child would not live long unless the stone were removed. The operation was successfully performed, less than the usual quantity of blood being lost at the time; between three and four hours afterwards, a slight oozing from the external incision was noticed, and in about two hours more the child was dead. After death, a clot of firm consistency was found in the bladder, distending it to some extent. The mother, upon being questioned, said: "As far back as my own grandmother's generation, and from hers downwards, the male children have been subject to great bleeding from slight causes. Three of my own brothers died before they were four years old, from loss of blood. Of my own offspring, three have already died from the same cause. This one makes the fourth." She also stated that the male children of her sister exhibited evidences of possessing a similar diathesis, but that none had, up to that time, died. Of her own children who had died of hemorrhage, one, aged thirteen months, died in consequence of the lancing of an abscess. Another, aged seven years, died from loss of blood, caused by biting his tongue, and the third cut his gums, and bled to death.

Mr. Durham says there are two conditions generally confounded under the name of hemorrhagic diathesis. In one condition there is a tendency to profuse hemorrhage from small wounds, in the other there is a great inability to bear the loss of small quantities of blood.

XXI. *On Gastric Erosion.* By F. W. PAVY, M. D., F. R. S.

It is well known that Hunter looked upon the erosion of the stomach, which is frequently found after death, as the effect of post-mortem softening, and explained the immunity of the mucous membrane of this organ from digestion by its own secretion during life by the protecting influence of the living principle. Bernard, however, proved that this explanation was insufficient, for he showed that the hind legs of a living frog underwent digestion when introduced into the stomach of a dog through a fistulous opening, and Dr. Pavy has found that the tip of a rabbit's ear was similarly attacked. Bernard then suggested that the stomach escaped digestion in consequence of the power it possesses of renewing constantly its epithelial layer, and that the cessation of this process permits the unrestrained action of the gastric juice upon its coats. Dr. Pavy, wishing to submit this explanation to the test of experiment, excised patches of mucous membrane from the stomachs of dogs, and was surprised to find that no further destruction of the walls occurred, and that ultimately in most of the cases repair by cicatrization took place.

In a communication on the "Immunity enjoyed by the Stomach from being digested by its own secretion during life," in the *Transactions of the Royal Society* for 1863, Dr. Pavy has given the results of a number of experiments, by which he was conducted to the conclusion that the cause of this immunity is to be found in the excessive alkalinity of the blood in the gastric veins.

The alkalinity of the blood, it will readily be conceded, is greatest just when the acidity of the secretion is most marked. Now, if by any means we can reduce the degree of alkalinity of the blood circulating through the stomach, or on the other hand increase the acidity of the secretion, we shall bring about digestion of its coats. The former may be accomplished by preventing the flow of blood through the organs, either by ligaturing its vessels, or by causing a constricted portion of its walls to protrude into its cavity; the latter may be induced by introducing some non-corrosive acid, as citric, into the stomach.

The reason for the escape from digestion of the larvæ of the œstrus (popularly called bots), which are frequently found in the stomach of a horse, is simply that they are so firmly attached to the walls of the stomach as almost to partake of their nature, besides which chitine, which forms the basis of their external tissue, is of an exceedingly indigestible nature. Leeches or earthworms undergo digestion like ordinary morsels of food. In a treatise on Embolism, published in 1860, Cohn advances the view that ulcers of the stomach are due to embolism of some of its arteries, which by cutting off the supply of blood from a certain portion of it allows digestion of its walls to take place.

All of these papers are of more than usual interest, and we regret that our limits will not permit us to notice some of them much more in detail. We look upon the volume as one of the most valuable that has ever been issued by the Staff of Guy's Hospital.

J. H. H.

ART. XVIII.—*Transactions of the Obstetrical Society of London, for the year 1867. Vol. IX. With a list of Officers, Fellows, etc.* 8vo. pp. 307. London, 1868.

THE volume before us opens with the account of a case of *Fracture of the Pelvis, with Injury to the Uterus in the Sixth Month of Pregnancy;* death occurring at a subsequent delivery, by Dr. T. FAIRBANK, of London. A sketch of this case has been given in the number of this Journal for April, 1867, p. 553. And also of the second paper, on *Criminal Abortion*, by Dr. JOHN SHORTT, of India, in the same number, p. 554.

The third paper is the account of a case of *Paraplegia during Pregnancy*, by Dr. P. BOULTON. But few parallel cases are on record. The patient was tall, stout, arthritic looking; thirty-eight years old; the mother of a living healthy child. When she supposed she was some months advanced in her second pregnancy (May 17, 1866), she was apparently in perfect health. Some two weeks subsequently she was paraplegic—being quite unable to stand or to grasp anything tightly, though when told to move her extremities she could do so pretty well. There was complete insensibility of the limbs—power of speech perfect—questions being answered rationally. Memory entirely gone. Tongue not directed to either side when protruded. Features natural. Bowels very torpid; urine loaded with phosphates, but not albuminous. No pain of head. The patient slept badly. The above symptoms had come on gradually during the preceding fortnight. There was, in addition, loss of appetite, rapid emaciation, some contraction of the knees, with great pain upon any attempt being made forcibly to extend them. The heart was large and fatty. The absence of all signs of irritation—convulsions, cramp, formication, œdema, etc., and the asthenic appearance of the patient, led Dr. B. to consider the case as one of white softening with consequent diminution of the amount of blood in the brain and cord. Quinia was given in two grain doses, and the bowels were kept regular by aperients. At the end of two weeks, no improvement having occurred, strychnia was given in the dose of one-sixteenth of a grain. The case still continuing without improvement, a consultation was had with Dr. Eastlake, who accorded with Dr. B.'s view of the case. The action of the fœtal heart was heard distinctly. The patient was directed tincture of nux vomicæ in conjunction with the compound tincture of aloes. This treatment was continued for some time, but with little benefit. Occasional pains were experienced over the region of the kidneys with an increase of phosphates in the urine, which remained still non-albuminous.

July 11. Dr. SIEVEKING was added to the consultation. He recognized the case as one of extensive softening of the brain and spinal cord. He did not consider the patient to be pregnant, believing that the action of the maternal arteries had been mistaken for that of the fœtal heart. He advised a sedative at bedtime, quinia during the day, and a liniment to the knee.

13*th*. The patient was delivered of an eight months' female child, breech presentation, which had been dead, apparently, for a day or two. She had a good recovery, but with no improvement of memory.

27*th*. Complained of intense pain over the sacrum, for which she was blistered. On the 29th the pain was relieved, could better extend her legs, slept better, had eaten more, was more cheerful; still unable to stand; no improvement of memory. Up to January, 1867, she remained nearly stationary. She now eats well, has regained flesh, her bowels are moved regularly; urine clear, *sp. gr.* 1022, contains no albumen; but "in spite of strychnia, quinine, iron, ammonia, iodide of potassium, blisters, and fresh air, taken on fine days, in a Bath chair; her memory and her ability to stand alone are gone.

Article 4.—*Fœtal Peritonitis* (in Utero), by W. A. HUNT, ESQ., King's College, London, as shown by post-mortem appearances in a male fœtus (*twin*) which lived one hour after birth.

"The abdominal viscera presented the indications of both chronic and recent peritonitis. On raising the intensely congested omentum, the equally congested

intestines were painted over with recent lymph, and in parts constricted by tolerably firm threads, the result probably of some former attack. The abdomen resembled that of some animal which had been injected with an irritating fluid a few hours before death, and also that of one which had survived an attack a considerable time previous to death—a curious circumstance in the fœtus."

Article 5.—*Description of a Curious Monster*, which lived some time after birth, by Dr. W. Ross. The peculiar deformity in this case resulted from a great deficiency of osseous material, causing considerable arrest of development of the temporal, parietal, and superior maxillary bones. The parents were half caste Africans, and perfectly healthy. Of the exact character and extent of the monstrosity no adequate idea could be furnished by any verbal description unaided by the coloured drawing which accompanies the paper.

Article 6.—An account, by Dr. J. HALL DAVIS, of London, of a *Polypiform Cyst*, growing from the anterior wall of the vagina—in a single woman, twenty-eight years of age. The cyst was distended by a viscid olive coloured fluid and projected at the os externum vaginæ. Treated by incisions and iodine injections. The growth at the end of a week being but little diminished, Dr. D. decided to remove it by the wire rope écraseur, under chloroform. The upper fourth of the growth was purposely left to avoid injury to the vesico-vaginal septum. The patient had subsequently an opiate, passed a good night, did well, and was discharged convalescent some days after the removal of the growth.

A very interesting paper on *Diphtheria*, by Dr. A. WYNN WILLIAMS, is the seventh article. Dr. W. contends that diphtheria, in its "earliest commencement," has a local origin, the blood being affected secondarily. He considers that the depression of the system coincides with the appearance of the false membrane, and as this increases in extent so does the depression; which latter is caused by the absorption of fresh poisonous matter into the system, as in pyemia, from the decomposed and highly offensive pseudo-membrane, and that on the disappearance or removal of the latter, the depression is at once ameliorated. Dr. W. has found no remedy so efficacious in diphtheria, and at the same time so little likely to prove mischievous in the hands of parents, as the free local application of a strong solution of tannic acid—two drachms of the acid to two of proof spirit, and six of distilled water. When the deposit is situated either in the pharynx, œsophagus, larynx or trachea, the solution should be injected into these parts by means of what is known now as "the fluid pulverizer." Internally Dr. W. administers a mixture containing chlorate of potash, acidulated with hydrochloric acid, and bark or some other vegetable bitter, followed by the tincture of sesquichloride of iron, and, should paralysis continue, with the addition of tincture of nux vomica, or strychnia. Dr. W. thinks, also, that frequently washing the mouth with a solution of permanganate of potash would be of service in severe cases.

The 8th article is an account, by Dr. HENRY C. ROSE, of a case of *Disease of both Ovaries*—the right ovary forming a communication with the cæcum, and thence externally; the left ovary emptying itself into the rectum. The case terminated fatally at the end of about ten months after the disease of the ovaries was detected. The subject of this case was forty-two years of age, of sallow complexion, and somewhat anæmic; had suffered, she said, from menorrhagia for about two years; had had primary syphilis a few years previous to coming under treatment; had borne two children, of whom the youngest was sixteen years old. The patient had suffered, for a period of some nine months, from a good deal of pain in her left side.

Article 9.—An account, by Dr. E. PARSON, of London, of a case where *Local Anæsthesia, by the Ether Spray*, was employed in the removal of epithelioma of the cervix uteri by the écraseur. This case, to use the words of the relator, is interesting from several facts: 1. The peculiar susceptibility to the depressing effect of chloroform on the heart; possibly in some degree to be accounted for by the greatly diminished power of the heart from the frequent and excessive hemorrhage which this patient had previously been suffering. 2. The pain of the crushing action of the écraseur on the cervix uteri, paralyzing the heart of the patient just as efficiently as the chloroform. 3. The

application of the ether spray in deadening the sensibility of the diseased cervix uteri to such an extent as to allow the whole of the vaginal portion of the cervix to be removed with comparatively little pain or inconvenience. 4. This case teaches another lesson, that in all probability the sensation of burning was owing to the intense cold conveyed by the metal Bozeman's speculum and the metal retractors, upon all of which the ether spray could scarcely be prevented from playing; and possibly, in future experience, it may be advisable to employ a wooden duck-billed speculum and wooden retractors. And lastly it is a practical fact in removing part of the cervix, that in this case at least the application of the écraseur was greatly facilitated by gently drawing the cervix uteri slightly towards the outlet of the pelvis, in the axis of the parturient tract, instead of its being drawn directly downwards. This allowed the operator to fix the chain of the écraseur with the greatest possible precision, so as to take off the whole of the vaginal portion of the cervix without wounding the bladder.

Article 10.—Three cases of *A Third Nipple in the Human Subject*, reported by Dr. W. Bathurst Woodman. The first two cases occurred in a mother and her daughter; the third in a male. In all these cases the supernumerary nipple occurred on the left breast.

Article 11.—The same gentleman relates a case of *Chronic Inversion of the Uterus*, which had existed for more than five years, without giving rise to any serious symptom.

Article 12.—*A Rare Case of Intermural Fœtation*, related by Dr. J. Braxton Hicks. The patient, æt. 35, was delivered of her first child in August, 1864. Rather more than a year before her death she aborted at the fourth month. Not a drop of blood was lost on that occasion. The body of the fœtus was first expelled, and next day the head. No trace of placenta found. She recovered very well without any blood being lost. About five and a half months before her death she again conceived; its exact date was concealed by frequent metrorrhagia. Continued to enlarge till December 8. 1866, when, after some pains, a fœtus, about the usual size of one at five and a half months, was expelled without hemorrhage. The secundines not having come away, the fingers were introduced within the uterus for their removal; but they only encountered a ragged opening, with something soft within it. The case was left under the usual treatment. For four days things went on very well, when violent bearing-down pains occurred, in the midst of which the patient complained of severe pain in the abdomen; she became pale and faint, with gaspings, and died in a state of collapse within two hours. Necropsy next day. Body very anæmic. Within the peritoneum clotted blood was found everywhere diffused between the viscera, without much displacement. The quantity of clot was equivalent to about two pints of blood. The serum had gravitated into the pelvis; pressure downwards caused it to well up freely. On removing the clots the fundus of the uterus on its right side was found enlarged, reaching above the brim. Over this enlargement, beneath the peritoneum, veins of great size ran. At its upper part a rupture, about three-quarters of an inch long, had taken place, through which blood had escaped; and within it could be seen placental villi. The entire uterus being carefully removed, no adhesions were anywhere detected; its body was found enlarged symmetrically, except its upper part, towards the right side, the seat of the enlargement. The latter extended two inches beyond the limits of the enlarged uterus, being about two and a half inches in diameter at its base, where it arose from the uterine walls. Some of the large bloodvessels coursing over it were the third of an inch in diameter. A section being made through the enlargement, vertically, its walls generally were found to be about three-fourths of an inch thick; the cavity about five inches long. At the upper part, rather to the right side, was an opening about two inches in diameter, with ragged, loose, and free, sloughy-looking edges. Inside this opening could be seen the placenta, which filled the whole enlargement; it was slightly decomposed for about half an inch into its substance, the remainder pale and natural. The walls of the uterus were most attenuated at the spot where the laceration took place. Large sinuses were observed as in ordinary pregnancy. The uterus was not lined with anything

like decidua. Its mucous membrane was pale towards the os uteri, but became gradually more red towards the opening referred to. The entire length of the uterus externally, eight inches; diameter, six inches. There was no communication between the two lacerations; sound placenta, of two inches thickness, intervened. In this case it would appear that an intermural fœtation had taken place; that the fœtus continued to enlarge, distending the intermural cyst towards the peritoneal and uterine cavities, at about the same rate, though probably rather more readily towards the latter, into which doubtless it bulged, so as to distend the uterus to the size already mentioned. This portion giving way, permitted the escape of the fœtus, simulating thus an ordinary abortion. The uterus now shrank, and the tissue retracted, leaving the free lacerated edges as the only evidence, four days after, of that portion which bulged into its cavity. The mass of placenta being a source of irritation to the uterus, contractions ensued, causing compression of the cavity in which the placenta was contained, and producing great pressure upon the peritoneal side of the cavity, the latter finally gave way, rupturing a large subperitoneal vein, and hence the fatal hemorrhage.

Article 13.—A fatal *Case of Rupture of the Uterus*, occurring at the eighth month of pregnancy. By ROBERT DUNN, F. R. C. S., etc. Although this case presents a few points of interest, it conveys, comparatively, but little practical instruction.

Article 14.—*On the Treatment of Labour, complicated by Ovarian Tumour.* In this very excellent paper Dr. W. S. PLAYFAIR has collected and carefully analyzed the details of 57 cases, in which an ovarian tumour was pushed down in front of the presenting part, causing thus an obstruction to the passage of the child. He has limited the cases to those in which the tumour was ovarian, and, with one or two exceptions, separately noted, has not included any in which there was reasonable doubt as to the nature of the case. Out of the 57 cases collected by Dr. P., in 13 the labour was terminated by the natural powers alone. Of these, seven of the mothers recovered, and six—*i. e.*, 46.1 per cent., died. In order that a case of this sort may terminate without assistance, it is evident that the tumour must be very small or very compressible. Even in the latter case, before the child could be expelled, the tumour must have been subjected to an extreme degree of pressure, so that its bulk might be sufficiently diminished to permit the presenting part to pass. This, without doubt, would be extremely apt to cause in it an inflammatory action, which may, perhaps, account for the unfavourable results that have followed cases left to nature alone. In favourable contrast to the foregoing are the cases in which the size of the tumour has been diminished by puncture. These were nine in number; in all the mothers recovered. Six of the nine children were also saved. Unfortunately, in a large proportion of cases, the tumour is semi-solid; puncture even here should be invariably attempted, even when no fluctuation is apparent. The favourable results following puncture would seem, says Dr. P., to point to a resort to it, even when the tumour is of so small a size as not to preclude the possibility of delivery by the natural powers, in order to diminish as much as possible the pressure and contusion to which it is certain to be subjected.

"In five of the cases it was found possible to return the tumour above the pelvic brim, and in these also the termination was very favourable, all the mothers recovering. Failing puncture, therefore, this alternative should always be tried, and it will sometimes be found possible to dispose of the tumour in this way, even when it seems to be firmly wedged down in front of the presenting part, and is apparently hopelessly fixed in its unfavourable position."

In fifteen cases craniotomy was resorted to four times after puncture of the tumour. In two of the cases the tumour was not sufficiently diminished in size by the puncture to admit of the passage of the child, but in the other two it is expressly stated that the tumour collapsed, and that perforation was only performed because the child was known to be dead; hence, these two cases might fairly be left out of consideration in estimating the mortality of this treatment. Of these fifteen cases, eight of the mothers recovered and seven, or nearly one-half, died. Even in the cases that recovered, it is expressly noted in several instances that the recovery was only imperfect, and that the ovarian tumour

rapidly increased in size, and before long carried off the patient. This great mortality after craniotomy is attributed by Dr. P. to the same causes which give rise to the like unfavourable results in cases left to nature alone, the excessive contusion to which the tumour is necessarily subjected.

In respect to the other terminations of the complication in question, in four cases the tumour ruptured spontaneously, two of the mothers recovering. Twice the uterus ruptured before any attempt at delivery had been made. Turning was resorted to five times, four of the mothers dying, another proof of the great danger of extreme contusion of the tumour. The forceps were applied twice. Lastly, in one case, a sort of natural ovariotomy was performed, the tumour protruding through a laceration in the vagina, was removed by ligature. This patient had a good recovery.

With regard to the children, the mortality was least when the tumour was punctured or pushed above the pelvic brim, and greatest when the delivery was left to the natural powers; a result we might expect when we consider the prolonged labour necessary to effect delivery in the latter class of cases.

In the discussion to which the paper of Dr. P. gave rise, Dr. Barnes said that one subject of importance had not been sufficiently considered, the propriety, namely, of inducing labour when pregnancy was complicated with ovarian tumour.

"It might be laid down," Dr. B. remarked, "as a general law, that nature would not tolerate the concurrent progress of these two conditions, the simultaneous growth of two tumours like the pregnant uterus and an ovarian tumour. Something must give way. Dr. B. had observed three orders of events, which all pointed to the truth of this law, and to the practice he recommended. 1st. He had seen the tumour burst and the patient die; and in another case he had seen the tumour rotated on its axis so that the pedicle was strangulated, leading to rupture of vessels, labour occurring prematurely under the agony of death: or the uterus may rupture. 2d. He had repeatedly seen premature labor occur spontaneously with good result. 3d. The distress in breathing and hectic induced may be so urgent as to compel the physician to interfere. He had frequently acted in obedience to this law, and with the best results. The indication seemed to be clear, in all serious complications to pregnancy, to reduce the case to its simplest expression by eliminating one of the elements of complication. The most fitting element to remove was the pregnancy. This done, the ovarian tumour could be dealt with at a convenient time according to its special circumstances."

Article 15th.—*On a New Expanding Speculum for Operations on the Cervix Uteri*, by Robert Ellis. The instrument in question is certainly a very ingenious one. Without introducing the wood-cuts, it would be difficult to form an accurate idea of its construction and mode of action. A similar remark will apply equally to the subject of Article 16th, in which the same gentleman describes a *Self-Retaining Tenaculum for Operations on the Cervix Uteri.*

Article 17.—*The Account of a Case in which the "greater portion of a Dead Fœtus was retained in utero for a period of four years,"* by Dr. A. Halley. This case is replete with interest. It will scarcely admit of an analysis.

Article 18.—A case of *Extra-Uterine Fœtation*, treated by abdominal section, with recovery. This case is related by Dr. J. Braxton Hicks. It is a highly instructive one, furnishing, as it does, conclusive evidence of the practicability and safety of the abdominal section for the relief of patients suffering from the inconvenience and danger incident to extra-uterine fœtation. The patient was twenty-six years of age. The operation was not attended with any particular difficulty, and the patient's recovery, under a proper diet, and a regimen carefully conducted, with suitable dressings to place of operation, was remarkably prompt and complete.

Mr. Harper, in commenting on the case, remarked that, speaking generally, he thought, as regards operative treatment, the cases arrange themselves into two classes. One class includes thoses cases in which there were more or less severe attacks of peritonitis, producing adhesions to the abdominal walls and other surrounding parts, and in which, should the woman survive, there is an effort made to get rid of the fœtus by suppuration. The other class includes those cases

where the fœtus escapes suddenly, producing fatal hemorrhage or fatal peritonitis. The case related by Dr. Hicks belonged to the first class, and Mr. H. considered that there could be no doubt that opening the sac formed by peritoneal adhesions was a safe and philosophical plan of treatment, and one always to be adopted when feasible; but he would go further, and inquire whether we should not extend this line of practice to the second class of cases, and open the abdomen freely in those instances in which there was no doubt that the fœtus was not contained in the uterus, and where the woman is liable to speedy death at any moment, and not to wait for peritonitis to produce adhesions.

Article 19.—Cases and remarks illustrating the *History of Pregnancy complicated with Smallpox*, by Dr. ROBERT BARNES. The first question which arises is as to the influence of intercurrent smallpox upon pregnancy. Does it interrupt the course of gestation? In the three cases related by Dr. B., labour came on prematurely. The next question which presents itself is: In what way does smallpox excite premature labour? For the very excellent exposition of this question presented by Dr. B., we must refer our readers to the paper itself. To what extent is the life of the mother endangered? In the three cases related the mothers recovered, in another case seen by Dr. B., the notes of which he had mislaid, the termination was fatal. Dr. B. considers it in the highest degree probable that the fatality is much the greatest from attacks of unmodified smallpox. It is to be remarked, however, that pregnant women not unfrequently pass through genuine variola in safety. Still variola, pure or modified, must be looked upon as a dangerous complication, but less so, Dr. B. is inclined to believe, than typhus or typhoid fever. It does not appear that there was any excessive loss of blood during labour in the cases referred to. The chief danger arises, probably, in the puerperal state. In respect to influence upon the child: If the pregnancy is not interrupted, and the child is born alive at term, it will probably have gone through the disease. A practical question presents itself, Can we, by inducing labour in a pregnant woman, attacked with smallpox, increase the chances of safety of the child? In deciding this question it is necessary to consider that it is highly probable, in the first place, labour may occur spontaneously in the course of the disease; if not, the child may perish with the mother, or it may perish independently in utero; or it may take the disease and survive, or again, it may not take the disease in utero, but be born while susceptible to the infection, whilst the mother is still suffering from variola. In such a case is immediate vaccination desirable? If this be answered in the affirmative, as Dr. B. believes it ought to be, then, is it desirable in cases where labour has not occurred spontaneously, to induce it, in order to secure the opportunity of vaccinating the infant before it has become infected? No absolute rule can, Dr. B. thinks, be laid down. The condition of the mother, the mildness of the disease, will, in some cases, indicate the propriety of not interfering. But, as a general rule, Dr. B. is disposed to conclude that labour should be provoked at an early stage by introducing a flexible bougie into the uterus.

Article 20.—Case of *Variola in the Fifth Month of Pregnancy*, with consequent delivery at the full term of a dead child. By C. W. MILNE.

Article 21.—Dr. MEADOWS exhibited a specimen of *Monstrosity*, with a report on its peculiarities by that gentleman and Dr. A. J. BANNISTER. The child was born at term and survived for only a few minutes. It was perfectly formed as regards the upper portion of its body, but in place of lower extremities there was a sort of caudal appendage, which moved backwards and forwards as if by a hinge-joint. There was no anal orifice nor any external genital apparatus.

Article 22.—An account of *Hereditary Convulsions* confined to the males of a family, occurring in infancy, and at about the eighth month of intro-uterine life, by J. B. CURGENVEN. Mrs. N. was the mother of nine children, born alive at the full period—five girls and four boys. Two of the girls were twins; they died within five days after birth of marasmus; two other girls died during childhood, one of scarlet fever, the other of measles. One girl is living and healthy. Neither of the five had convulsions. Of the four boys, two died of convulsions in infancy, the others are living and healthy but during infancy and teething they suffered convulsions. In the last four pregnancies the fœtus died about

the eighth month, and, judging from the sensations of the mother immediately preceding the death, it is evident they all died of convulsions. They were all males. During the three previous pregnancies the fœtus died suddenly in a somewhat similar manner at about the eighth month. The mother of Mrs. N. had eleven children, of whom three boys and four girls died of convulsions at from three to fourteen months; two boys lived, but suffered from frequent attacks of convulsions. Two girls lived to grow up without convulsions, one being Mrs. N. The parents of both families were strong and healthy.

Article 23.—*The Salivation of Pregnancy successfully treated*, with a case, by Dr. T. Skinner, Liverpool. The remedy employed by Dr. S. for the cure of this terrible annoyance is as follows: ℞.—Aluminis sulphatis, ʒiss; magnesiæ sulphatis, ʒiij; acidi sulphurici diluti, ʒiij; tinct. opii ʒss; misturæ formyli concent., ad ℥vj.—M. Dose, a dessert-spoonful thrice daily, after food, in a wineglassful of water.

The last ingredient in the mixture is composed of one fluidrachm of chloroform, briskly agitated with a pint of spring water until the globules of the chloroform entirely disappear.

Article 24.—*On Carbolized Sponge Tents*, by R. Ellis, Esq. An abstract of this paper has already appeared in the number of this Journal for January, 1868, p. 276.

Article 25.—*On Puerperal Temperatures*, by W. Squire. This highly interesting paper is deserving a very attentive study. The general conclusions deducible, as the author believes from his observations, are—

"1st. That no great elevation of temperature arises in natural labour. 2d. That there is afterwards a considerable fall of temperature which is favoured by sleep. 3d. That there is a subsequent exaltation of temperature which has for its natural termination the secretion of milk. 4th. That the bringing the method of observation followed by Mr. S. to the study of the puerperal state would add an element of certainty to the principles and details of its management, and afford an additional guide for safe conduct through some of its complications."

Article 26.—Description of a *Drill Crotchet*, with indications for its employment, by Dr. Eastlake. The instrument consists of a hollow metallic cylinder eleven inches long; to one extremity of which is attached a transverse wooden handle, and to the other a solid steel trocar point. Through an aperture in the centre of the handle, communicating with the hollow of the tube, is inserted a steel rod, having a rack at its extreme end, which acting against a cog wheel close to the apex of the instrument forces out, at any desired angle, a bifid crotchet. In applying the instrument, the handle being held firmly in the right hand, the trocar point, guarded by the groove, between the first two fingers of the left hand, is carried up to the fœtal head, and fixed at right angles with the skull, when the latter is to be perforated by a semi-rotary movement of the instrument. So soon as the fœtal cranium is perforated, the crotchet is to be made to protrude. A firm hold by the latter being obtained, the fingers of the left hand should be placed outside that portion of the skull to which the crotchet is attached internally. In this way, if both hands be made to act in unison during traction, all danger to the soft parts of the mother will be avoided.

The special circumstances which may be said to render the employment of the *drill crotchet* practicable and especially useful are, according to Dr. E., the following: 1. The presentation being natural, the fœtus being dead, and the head within reach. 2. The patient still in the first stage of labour, and the os uteri being sufficiently dilated to admit of the introduction of at least two fingers. 3. If the delivery is to be effected by the sole use of the drill crotchet, there must be an absence of any great disproportion between the fœtal skull and the canal of the maternal pelvis, except in the case of a hydrocephalic head, when the use of the instrument would probably alone be sufficient. Lastly, these conditions being present, its application will be found most valuable in all cases in which, from any cause, *immediate delivery is indicated*. In cases of great disproportion between the fœtal head and pelvic canal, where the whole vault of the cranium has to be broken up, and no further purchase can be obtained by any crotchet within the skull, the instrument under consideration may be

conveniently made use of as a vertebral hook. The trocar point should be inserted into the foramen magnum, when a slight projection of the crotchet will enable it to become fixed in the spinal canal, and a strong hold consequently obtained.

Article 27.—An interesting and instructive account is given by Dr. J. H. DAVIS, of a large *Fibroid Polypus*, pediculated at its base to the posterior margin of the os uteri, its neck protruding at the vulva. Removed by the single wire écraseur. The patient recovered quickly without a bad symptom.

Article 28.—J. B. CURGENVEN, Esq., reports in favour of the *Bromide of Potassium*, as a remedy in puerperal mania. In this drug, remarks Dr. C., we have an agent of remarkable power in allaying nervous irritability and procuring sleep, and hence its good effects in attacks of puerperal mania. He gave the article in doses of fifteen grains, every four hours, at first, and then one dose each night.

Article 29.—*A Case of Triplets*, related by Dr. C. H. J. ROUTH, presents one or two points of interest, apart from its being one of triplets: A deformity of the pelvis, which was probably in some measure the cause of the inertia uteri which necessitated manual interference. The delivery of the second child, in a twin labour of which the patient was the subject previously to this triplet case, a whole day after the first. An unusual occurrence, but which, doubtless, would have recurred on this occasion but for the resort to manual assistance. It is also quite within the range of possibility the children might not have been born for days after each other, and thus afforded another instance of what some regard, but erroneously, as evidences of superfœtation.

Article 30.—Dr. H. M. MADGE describes a *Case of Spina Bifida* with talipes varus of both feet. The child lived some seven months. The case is not one demanding on our part a more full exposition.

Article 31.—On the *Induction of Premature Labour by Injection to the Fundus of the Uterus*, by J. LAZAREWITCH, of Kharkoff, Russia. The object of the author of this paper is to prove that the surest methods of induction of premature labour are those in which the body or fundus of the uterus is excited. From the several considerations adduced by Dr. L. and the result of the twelve cases in which premature labour was induced, he concludes that when to this intent injection into the cavity of the uterus is resorted to, to secure the certainty and promptness of its action the fluid injected should approach as near as possible to the fundus of the uterus, this being the part of the organ most sensitive to irritations.

In the twelve cases related by Dr. S. ten required only one injection; in two a second injection was made, but only to augment the labour pains. The water injected was warm, 28° R. In four cases six ounces were injected, in one five ounces, and in seven cases, four ounces. The labour pains commenced immediately after injection, except in one case, where it was delayed for some hours. The duration of the labour was from three and a half to thirty-six hours. Its mean duration from the time of injection to the termination of labour was about nineteen hours. In all cases the result was favourable to the mother, save in one. In this, however, death was not certainly the result of the operation, but of previous disease. Of the children, nine were born alive, one was still-born, and two died before the operation. In all cases the object of the operation was either partially or fully attained. In one case vomiting ceased after the operation, and the patient fully recovered; in another case convulsions ceased after the operation, and the patient convalesced. In two cases, though the pelvis was narrow, the parturition was normal—both mothers and children have since enjoyed good health. In one case the child was born alive, while in the two preceding pregnancies the fœtus died a fortnight before parturition. In two cases, the pelvis being exceedingly narrow, and in two previous births cephalotripsy being performed, by the induction of premature labour, a still-born child was extracted by the forceps in one and in the other a boy was born and lived several hours. In two cases, the operation being resorted to in consequence of disease of the mothers, cystitis in one case, metro-peritonitis in the other, after parturition the symptoms of disease diminished. In two cases, both epileptic, the parturition was normal and without fits, which considerably abated, and even for a long time ceased, after

birth. In the majority of cases no preliminary measures were taken; not even a bath was taken except in one. Attention was always paid to state of bowels. In all cases the operation was made with the greatest ease, and without causing pain; in five cases the patient felt the movement of the fluid in the abdomen, and sometimes a slight momentary pain at the epigastrium.

Article 32.—Account of a *Case of Imperforate Anus* in which the child lived upwards of ten weeks without relief from the bowel, after two unsuccessful operations, by Dr. W. F. Cleveland. On examination after death, it was ascertained that the rectum was pyriform in shape; at its lowest extremity there was an aperture about the size of a crow-quill, communicating with the posterior part of neck of bladder about a quarter of an inch above the urethral opening. It is surprising that by those who first saw the case, the relief of the infant was not attempted by the performance of Amussat's operation.

Article 33.—On the *Condition of the Uterus in Obstructed Labour*, and an inquiry as to what is intended by the terms "Cessation of labour-pains," "Powerless labour," and "Exhaustion," by Dr. J. Braxton Hicks. Of this long and most instructive paper we can afford room only for the *résumé* of the principal points desired to be established by the author.

1. It is very rare to find symptoms of *powerless labour* (Churchill) where the uterus is relaxed. 2. Where serious symptoms have begun, and at the same time the pains have apparently ceased, it will almost invariably be found that the uterus is in a state of continuous action. 3. The *continuous* action is the cause of the symptoms of powerless labour. 4. The time at which these symptoms arise varies considerably according to peculiarity of the patient, the violence of the action, and the position and presentation of the child. 5. If this constant contraction be fully established, it is better to deliver the child artificially, unless we first try the effect of chloroform. 6. The effect of the continuous action is exhausting to the mother, and liable to be fatal to the child. 7. The use of secale is contra-indicated in such cases. 8. Where the uterus is lax, we can generally wait a considerable time without danger to the mother or to the child. When the uterus has been allowed time to recover its nerve-force, then it is advisable to give some oxytoxic, as secale, etc. If this fail, we may then draw down the head to the vulva slowly and cautiously, which will probably induce uterine action. The removal of the child must be done cautiously, and only as we find the uterus to respond.

Article 34.—*Case of Encephalocele*, by Heywood Smith. The tumour was situated at the posterior part of the head, its root occupying the whole of the occipital bone, save about from a quarter to a third of an inch of its anterior and lateral portions. The projection of the tumour equalled in extent about one-third of the size of the whole head. The infant was alive when exhibited, on the second day after its birth, to the Society.

Article 35.—Case of *Traumatic Aneurism of the Uterine Artery:* Fatal Hemorrhage. By Dr. Grailly Hewitt. This case has been noticed in the number of this Journal for April, 1868, p. 550.

Article 36.—Report of a *Case of Cæsarean Section*, by Dr. D. Lloyd Roberts. The operation was performed in a case of distorted pelvis. The child, a girl, was born alive. The patient died, within a week after the operation, of peritonitis.

Article 37.—*On the Relative Value of the Various Substances which have been used in Dilating the Neck of the Womb*, with a plan for deodorizing sponge-tents, by Dr. J. H. Aveling. Dilating tents have been used from the earliest ages; the substances of which they have been made are very numerous. A long list of roots of vegetables have been used for this purpose. That o the *gentiana lutea* has been the longest and most employed. It dilates more rapidly and to a greater extent than most of the roots in use; it is also cheap and easily obtained, and readily cut into the desired form. Dilating tents have for many ages been made of the pith of canes and certain trees. Its friability, however, renders this an unsuitable and dangerous substance for the fabrication of tents, though, otherwise, in most respects everything that could be desired. The bark of the slippery elm is objectionable because of its brittleness, and slight and slow expansibility. Tents have been made of cotton, lint, tow, wool,

etc. These substances have no special advantages to compensate for their many disadvantages. The dried stem of the sea-tangle (*laminaria digitata*) has been used as a dilating tent; it is largely expansible, but hard, polished, and metal-like, so as to be with difficulty retained *in situ*. Under all circumstances, good, hard Turkey sponge presents by far the best material, and if it can with certainty be deodorized, its use is without any drawback. Mr. Ellis accomplished this end by means of carbolic acid, and Dr. Aveling by permanganate of potash. A conical piece of the sponge is transfixed in its long axis by a silvered knitting-needle, and tightly bound round with twine. When dry, the needle is withdrawn, leaving a tubular opening. After the tent has been filed into shape, and smoothed with sand-paper, its smaller end is sealed with a drop of melted white wax. The permanganate of potash, being very finely powdered, is now dropped within the tent in extremely small quantities at a time, and shaken down carefully. When the opening through the centre of the tent is filled, it is closed by another drop of wax. A thread of silk being passed through the end of the tent, it is ready for use.

"Until the tent has dilated to its very centre, the charge of permanganate, about two grains, remains undisturbed. It then gradually dissolves, and in solution renders the tent so perfectly sweet that, upon its removal, no unpleasant odour can be detected."

Article 38.—*Description of An Obstetrical Register*, by Dr. DRAPER MACKINDER. The register proposed by Dr. M. is certainly a very useful and well arranged one; but not more so than any of those in use among the practitioners of nearly all our larger cities.

Article 39.—Dr. A. HALL, of Edinburgh, describes an extraordinary *Case of Monstrosity*. Of the peculiarities of structure present in this case, no clear idea could be formed from any verbal description, unaccompanied by the drawings which are appended to the paper of Dr. Hall.

Article 40.—A case of *Puerperal Fever, or Puerperal Pyœmia*, after an abortion; with remarks by Dr. T. SNOW BECK. Already noticed in the number of this Journal for April, 1868, p. 551.

Besides the foregoing forty articles, the volume contains the addresses of the retiring President and his successor; notices of the presentation of certain new instruments; short notices of cases and operations; cases of abnormal organization; specimens of morbid structure, etc. D. F. C.

ART. XIX.—*Prof. Beale's Recent Histological Investigations.*

I. *New Observations upon the Structure and Formation of certain Nervous Centres, tending to prove that the cells and fibres of every nervous apparatus tend to form an uninterrupted circuit.* By LIONEL S. BEALE, M. B., F. R. S., Professor of Physiology and Morbid Anatomy in King's College, London, etc. 4to., pp. 31, with 8 plates and 46 figures. London: John Churchill & Sons, 1864. From Proceedings of the Royal Society.

II. *New Observations upon the Minute Anatomy of the Papillæ of the Frog's Tongue.* By LIONEL S. BEALE, M. B., F. R. S., etc. 4to., pp. 14, with 2 plates and 23 figures. From Proceedings of the Royal Society, 1864.

III. *Indications of the Paths taken by the Nerve-currents as they traverse the Caudate Nerve Cells of the Spinal Cord and Encephalon.* By LIONEL S. BEALE, M. B., F. R. S. 8vo., pp. 10. From Proceedings of the Royal Society for 1864.

IV. *Notes of Observations to ascertain the Ultimate Distribution of the Nerves of Gustation; their Ultimate Distribution not Terminal.* By R. K. BROWNE, M. D., Professor of Physiology and Microscopic Anatomy in N. Y. Dental College, etc. 8vo., pp. 11, with a plate.

I. IT is impossible to give a correct idea of the researches detailed in the above papers by Dr. Beale, without presenting the rare and beautiful illustrations by which they are accompanied. Reference has already been made in a previous

notice of one of his works, to the method of Dr. Beale, which is to draw his own illustrations from objects as they appear under the microscope, by means of the drawing prism. The accuracy thus attained by a conscientious observer cannot be equalled by any other method, and observation has been much aided by the reiterated stress laid upon such methods in the various papers and text-books of Dr. Beale. A single but great obstacle lies in the expense of reproducing these drawings in woodcut or lithograph. This is also in a measure obviated by making the drawings primarily upon stone; a plan also practised and recommended by Beale.

Beale holds, in opposition to Kölliker, that unless the supposed difference in the arrangement of a particular structure, as terminal nerves, be associated with a fundamental difference in the minute structure of the tissue supplied by or under the immediate influence of such particular structure, the arrangement of the latter in one animal is its arrangement in another. Thus, if nerve fibres terminate in ends on the sarcolemma of the muscles of frogs, they terminate in ends on the sarcolemma of the muscles of the mouse. That in one case there may be more ends than in another, and there may be all sorts of modes of branching at different angles, etc.; but that no fundamental difference exists in the arrangement of nerve fibres in corresponding tissues of different animals.

"So, admitting, as we must, that by far the majority of ganglion cells in different nervous centres have more than one fibre in connection with them, it seems to be more reasonable to conclude that these cells which appear to have, and those in connection with which no fibres whatever have been demonstrated, have really two or more fibres connected with them, but too fine to be demonstrated by ordinary means, than to accept the ordinary inference that there are, in the very same part or organ, three distinct classes of nerve cells, exhibiting as many fundamental differences of relation to fibres as they are supposed to influence."

Without admitting a complete parallel between these two sets of probabilities, we see not why the latter should not be admitted if a sufficient number of accurate anatomical observations can be brought to bear upon the subject. This appears to have been done by Dr. Beale, who has studied the question in different parts of the nervous system, and in different animals, from the mammalia to the annellida, whence he feels justified in drawing the following conclusions:—

"1. That in all cases the fibres are in bodily connection with the cell or cells which influence them, and this from the earliest period of their formation.

"2. That there are *no* apolar cells, and no unipolar cells in any part of the nervous system.[1]

"3. That every nerve cell, central or peripheral, has at least two fibres in connection with it."

The observations upon which these conclusions are based have been made with the aid of powers of from 700 to 1800 and even 2800 diameters, and although limited to the cells of the ganglia in different parts of the body of the frog, involve the consideration of fundamental principles with regard to the minute structure of this highest of the animal tissues.

1. As to the *general description of ganglion cells*, all exhibit the same general structures, with many special peculiarities and great differences in size. Their general form "is oval or spherical; but on closer examination the most perfect ganglion cell is more or less pear or balloon-shaped, continuous by its narrow extremity with nerve fibres which may be followed into nerve trunks." The substance of the cell is more or less granular, and generally, near the round

[1] This statement is reiterated in some remarks upon the structure of nerve fibres contained in the fourth and last edition (1868) of "How to Work the Microscope," where Dr. Beale states: "Many observers, however, still maintain that the appearance (mode of connection of the ganglion cell with the fibre) is due to the ganglion-cells being inclosed in a capsule of connective tissue, *and assert that some cells exist from which no fibres whatever proceed.* These strange notions are still taught in many of our most celebrated text-books, and are erroneously forced upon the mind by the repetition of old figures." (p. 129, a. f.)

end is contained a large circular nucleus with its nucleolus, in addition to which are sometimes a number of small oval nuclei, arranged transversely to the long axis of the cell. The matter of the mass of the cell gradually diminishes in diameter, and contracts so as to form a fibre in which a nucleus is often seen. At the *circumference* of the cell, about its centre, the material gradually seems to assume the form of fibres, which contain numerous nuclei, and *these pass around the first fibre in a spiral manner.* Thus a fibre comes from the centre of the cell (*straight fibre*), and one or many fibres (*spiral fibres*) proceed from its surface. *Neither* of the fibres *can be traced to the large nucleus of the cell.*

2. As to the *formation* of the ganglion cell (p. 5) it does not, at all ages, possess a well-defined cell wall, cell contents and nucleus, but always consists of *matter that is living,* and *matter that has lived,* germinal matter, and formed material, the first stained by an ammoniacal solution of carmine, the latter not. It is this germinal matter which is usually termed the nucleus, of which the nucleolus is but a younger portion, and assumes a deeper tinge of red by carmine.

In very young animals these ganglion cells form (*a*) nuclei or centres of germinal matter imbedded in soft granular matter.

Fibres extend from these collections in at least two directions, but *do not grow out* from the cells, but are formed as two masses of germinal matter gradually separate from each other, leaving a fibre of formed material between them. It is important to understand this, as it is in this way that all nerve fibres are developed, according to Beale. A cell or mass of germinal matter surrounded by a variable quantity of formed material is present. From the abundant supply of pabulum, it grows rapidly and finally subdivides into two masses. These, as they approach their fully developed form, acquire formed matter upon their periphery, and gradually move away from each other, though *they do not actually sever their connection,* which is kept up, as it were, by a thread of formed matter which *constitutes* the nerve fibre; as the cells further separate, the fibre is elongated or grows in length.

Ganglion cells are also formed (*b*) by changes similar to those described in young animals, by the splitting up of a mass like a single ganglion cell, increasing thus in *number* as well as size; and (*c*) by changes in what appears to be a nucleus of a nerve fibre. These latter "changes occurring during the formation of a single ganglion cell, in connection with what is undoubtedly at first a single granular fibre, are of the utmost interest." Though Dr. Beale candidly admits that he cannot be perfectly confident that the history he gives of the changes is absolutely true in all points of detail—this is partly due to the difficulty in isolating fine fibres with nuclei exhibiting the different stages of change, and partly to the difficulty in finding specimens in which such fibres are observed. A nucleus, not perhaps any nucleus connected with a nerve fibre, but a nucleus in no way peculiar, grows somewhat larger than the rest, which, at this stage, is of course bipolar, or has a fibre springing from each end. But this only, according to Beale, as a "*young and imperfectly formed*" cell.

3. From this point of formation further changes in the ganglion cell take place similarly, regardless of the mode of origin. "The two opposite extremities of the cell are drawn down. The fibres increase in length and lie parallel to each other, and the form of the cell becomes much altered." Finally, the one fibre assumes in position the relation of a spiral to the other, and the ganglion cell as described results. Subsequently the two fibres, after assuming various positions in relation to a bundle of nerve fibres, alter their course and run with the other fibres of the bundle, *but in opposite directions,* though from their extreme tenuity ($\frac{1}{8000}$ of an inch in diameter), it is very difficult to follow them, and they are apt to break off close to the cell to give the appearance of an *apolar cell,* while the fibres which were continuous might be mistaken for *connective tissue fibres,* modified forms of which they are erroneously claimed by some to be.

4. With regard to the *spiral fibre,* in all but very young ganglion cells, it exists necessarily of greater length than the straight fibre, and eventually takes a course in the compound nerve trunk *opposite* to that of the straight fibre,

with which it may have been for a certain distance parallel. The spiral fibre is also continuous with the periphery of the cell while the straight is continuous with the body, and *the spiral* may, as the *straight*, have nuclei connected with it.

Beale believes its relation to the straight fibre to be caused by a *rotation* of the peripheral part of the cell around the central fibre. In this connection, as an important fact, Beale states, that "whenever any compound nerve trunk, large or small, composed of any form or number of nerve fibres in any part of the organism of man or animals, passes into another trunk running at, or nearly at right angles to it, its component fibres divide into branches which pass in opposite directions."

5. As to the *essential nature* of these changes, the nucleus everywhere takes an important part; hence its large size in young cells. This nucleus or mass of germinal matter, at first constituting the entire mass of the cell, undergoes conversion into formed material, resulting, as stated, in the formation of nerve fibres as well as ganglion cells.

6. But it must be remembered that neither the nucleus, nucleolus, or still younger centres of germinal matter within the latter, which may be called "nucleoluli," possess peculiar powers or actions upon matter around them; *nor is the nucleus* essential to the *being* or *multiplication* of the elementary part or cell. And here we may take advantage of an explicit statement of Beale in this paper, to correct an error which has crept into the notions of many who have studied the theory of Beale; and this is that the nucleus and its contents correspond exactly, or are the only germinal matter of the cell. He says: "The matter around the nucleus differs from the nucleus itself only in having reached a further stage of existence. The whole of the germinal matter of which the young cell is almost entirely composed, may divide and subdivide, and from it any number of new cells may be produced. Nor is it necessary that a nucleus should be present in the detached portion; the nucleus is often not to be distinguished until some time afterwards. This fact may be observed in the germination of pus and mucus." The nucleus *may* be the only germinal matter present in a cell, it is *always* a *part* of the germinal matter and may be the whole of it. So too the formed material may or may not form a cell wall, it may form a nerve fibre, a muscular fibre, wall of a capillary, etc. The germinal matter is simply the intermediate living state through which all pabulum must pass before it becomes tissue.

7. As to the fibres in the nerve trunks continuous with the straight and spiral fibres of the ganglion cells in the frog, Beale arrives at these conclusions:—

"1. That in some instances very fine fibres, not more than $\frac{1}{50000}$ of an inch in diameter, are alone continuous with the straight and spiral fibres of the ganglion cell.

"2. That a dark-bordered fibre may be traced to the ganglion cell as the straight fibre, while the spiral fibres are continued as very fine fibres.[1]

"3. That spiral fibres may be continued onwards as dark bordered fibre, which may be wider, at least for some distance, than the fibre continued from the straight fibre.

"4. Both straight and spiral fibres may be continuous with dark bordered fibres."

But when a ganglion cell is developed upon a nerve fibre already formed, Beale considers that it cannot be regarded as a centre from which two nerve fibres proceed direct to their peripheral distribution, but as *a centre placed at*

[1] It may be appropriate to give in this connection a definite notion of what is intended by Dr. Beale by "dark bordered" and "pale or fine nerve fibres." By the former he intends the nerve fibre as ordinarily defined, and consisting of the tubular membrane, white substances of Schwann, and axis cylinder, the presence of the second highly refracting constituent giving rise to a dark double contour familiar to all who have examined the fibrils of a spinal nerve. The latter term he applies to nerves which in their minute ramifications have parted with the insulating white substance, and consist only of the axis cylinder or band of Remak. They are identical in composition and appearance with the pale gray or sympathetic nerve fibres.

a part of a circuit which existed as a complete circuit before the ganglion cell was developed in connection with it. If this be the case, a question arises as to the function of the ganglion cell under these circumstances. Does it become a mere conveyer of impressions and motor influences, or does it retain these functions usually assigned to ganglion cells, of receiving and originating influence? If the former, its development would appear purposeless, and if the latter, the existence of the two nerve fibres, *afferent* and *efferent*, appears essential.

8. As to the *ganglion cells of the heart*, Beale states as the result of numerous observations, that: 1. There are no apolar cells, either in the ganglia of the heart or in those of the bladder of the frog. 2. The unipolar cells of Kölliker have really two or more fibres proceeding from them, so that, according to Beale, the statement of Kölliker that "all the cells connected with nerve fibres send out but a single fibre" is not a fact. 3. Some fibres pass in a central direction; so that Kölliker's statement that all the fibres pass in a peripheral direction is also erroneous.

9. Of the *ganglion cells and nerve fibres of the arteries* we are informed that in nerve trunks running near the branches of the arteries of the palate, and in connection with the arteries of the different viscera of the abdomen, heart, and lungs, and bladder of the frog, ganglion cells and ganglia are found in considerable number. From these, fibres are traceable to the coats of the arteries and even among the muscular fibre cells of arteries $\frac{1}{1000}$ of an inch in diameter. It is even possible that nerve fibres are distributed to the lining membranes of an artery, though Beale has not been able to satisfy himself of this fact; but in the auricles of the heart and commencement of the cava, very fine nerve fibres are certainly distributed very near to the internal surface, being separated from the blood only by a very thin layer of transparent tissue. These nerves invariably form networks with wide meshes. It is stated, also, that the nerves which supply the small arterial branches in the voluntary muscles of the frog come from the very same fibres which are distributed to the muscles. Dr. Beale has seen a dark bordered nerve fibre divide into two branches, one of which ramified upon an adjacent artery, while the other was distributed to the elementary fibres of the muscle. Can Dr. Beale intend by this to convey the impression that nerve fibres are supplied to bloodvessels from the cerebro-spinal system, in *addition* to the fibres from the sympathetic system, or in exclusion of them?

10. As to the *connection of ganglion cells with each other*, it is deemed almost certain by Dr. Beale, that, in many cases, ganglion cells of one ganglion are connected by fibres with cells of another ganglion even after development is complete.

11. On the subject of the *cell wall*, or "*capsule*" *of the ganglion cell*, and especially of the *connective tissue and its corpuscles*, Dr. Beale makes some important statements. At an early period of the life of the ganglion cell there is no proper cell wall, it is all germinal matter; the cell may form protrusions at various parts of its surface, like a young epithelial cell or mucous corpuscle, which, on being detached, may give rise to the formation of a new cell. As it grows older, the cell becomes surrounded by a transparent substance, which, in some instances, assumes a definite outline, and may be termed a cell wall, while in others it would be more correctly described as a matrix.

With regard to the possibility of distinguishing the finest nerve fibres from connective tissue, Beale says: "Although it is undoubtedly true that in preparations mounted in certain fluids, it is not possible to distinguish the finest nerve fibres from connective tissue, this distinction can most clearly be made out in some of my specimens." Again: "All fibres which can be followed for a considerable distance, which refract like true nerve fibres, and exhibit an appearance more or less granular, especially if they can be followed into ganglion cells, must clearly be pronounced nerves. The finest nerve fibres may often be followed amongst the connective tissue for a long distance, and their relation to other structures most positively determined." (pp. 22, 23.)

This is truly encouraging to workers in a most difficult subject, and should at least incite them to test the efficacy of Beale's method of preparation, as published in his text-books.

But there are certain indefinite forms of connective tissue immediately sur

rounding nerve fibres and ganglia, which give rise to greater difficulty in deciding the true nature of the fibre or corpuscle of germinal matter. There are forms of connective tissue corpuscles which originate in the multiplication of *nuclei of ganglion cells*, of which nuclei those lying upon the surface of the nerve fibre are only able to produce a low form of connective tissue, which accumulates around the nerve centres. It will be recollected, also, that Beale suggests a somewhat similar origin to certain of the cord-like fibres of the so-called yellow elastic tissue which resist the action of acetic acid, and which constitutes an element of ordinary connective tissues. These he believes to be degenerated nerve fibres. He informs us, also, that not nervous tissues alone, but *structures no less special than a uriniferous tube, or a portion of the cell containing network of the liver may waste, and all that represents it will be what is termed connective tissue and connective tissue corpuscles.* Thus, connective tissue and connective tissue corpuscles are produced from the very same masses of germinal matter as those from which nerve cells and nerve fibres are produced.

It should also be stated in this connection, that according to the views of the German anatomists, the "nucleated fibres" which seem almost to encircle many of the nerve cells of mammalia, and which correspond, according to Beale, to the "nucleated spiral fibres" described by him in this paper, are considered "nucleated connective tissue." Such views Beale attributes to methods of preparation, and says, moreover, that "there is little doubt that when the changes occurring during the development of special tissues shall have been patiently worked out by the use of high powers and better means of preparation, opinions on the connective tissue question will be completely changed. *The idea of the necessity for a supporting tissue or framework will be given up*, and many structures now included in 'connective tissue' will be isolated, just as new chemical substances, year after year, are being discovered in the indefinite extractive matters." (p. 25.)

"It is remarkable how positively many authorities deny the existence of structures they have failed to demonstrate. Such a course is only justifiable on the presumption that the art of demonstrating structure has arrived at perfection; but we know, on the contrary, that it is but in its infancy. Surely it is premature to maintain that the vessels of the umbilical cord are destitute of nerve fibres, because we may have failed to demonstrate them—that the fibres of voluntary muscle only receive nervous supply at one point, because authorities will not admit that nerve fibres may exist which are too delicate or too fine to be demonstrated by the means they may have employed—that the spindle-shaped fibres of organic muscle generally are not supplied with nerves, because they cannot find them—that the fibres prolonged from the large cells in the cord and in the brain are not continued into fibres, because they have failed to trace them for any considerable distance."

"I think I can convince any one, by positive demonstration, that the last three positions are untenable; while there is every reason to believe that certain *elongated nuclei* and *fibres* which are to be seen amongst the *muscular fibre cells* of the *umbilical arteries*, and *on the smaller vessels of the placenta, really belong to the nervous tissue.*" (pp. 25, 26.)

In a similar manner Dr. Beale also writes in the last edition of "How to Work the Microscope," already referred to. "In Germany, for many years past, many anatomists have been trying to reduce everything to what they call connective tissue, which, to any ordinary observer, would appear to be the least important tissue in the organism. It is even now a matter of the utmost difficulty to get a fair hearing if you attempt to extract anything real and definite out of the favoured indefinite connective tissue. In spite of all this, however, it has been clearly proved that Remak's fibres are true nerve fibres, and that dark-bordered nerve fibres, before they reach their ultimate distribution, *invariably assume the pale granular appearance of Remak's fibres.*"

II. In the second of the papers of Dr. Beale, he gives the results of some recent investigations upon the minute anatomy of the beautiful fungiform papillæ of the tongue of the little green tree-frog (hyla arborea). In these researches

he has made use of the $\frac{1}{25}$ objective magnifying 1700 diameters, and $\frac{1}{50}$ magnifying 3000.

As recent contributors upon this subject are named Waller, Billroth, Hoyer, Axel Key, and Hartmann, among whom Axel Key is stated to have approached nearest to the truth.

Beale has not, however, been able to verify his views (Axel Key's) as to the presence of two kinds of cells at the summit of the papilla, epithelial and special cells, concerned in taste—nor his delineations of the abrupt cessation of the white substance, the prolongations of the axis cylinder and its division into fibres far too fine to be visible by the magnifying powers employed; while, on the other hand, Axel Key has not demonstrated the peculiar network at the summit of the papilla so distinctly seen in Beale's specimens.

Hartmann's method of preparation is stated by Beale to be utterly destructive of normal appearances, and in common with other methods pursued in Germany calculated to retard rather than advance anatomical inquiry. It consisted in soaking the tissue for three days in solution of bichromate of potash, and then adding solution of caustic soda.

The structures entering into the formation of the papilla are: "1. The connective tissue which forms the body of the papilla. 2. The epithelium. 3. The nerve fibres in the body of the papilla, and the fibres prolonged from them which form a plexus upon its summit. 4. Nerve fibres ramifying in the connective tissue, upon the capillary vessels and upon the muscular fibres. 5. The muscular fibres. 6. The vessels."

1. The connective tissue is exceedingly delicate and transparent, and the majority of the nuclei are undoubtedly connected with the nerves, bloodvessels, and muscular fibres imbedded in it, though a few seem to belong to the connective substance alone and are properly termed "*connective tissue corpuscles;*" though even these, at an earlier period, may have been connected with nerves or muscles, and especially nerve fibres which were in a state of functional activity at an earlier period of life. To such connective tissue the term "indefinite connective tissue" is given throughout Beale's papers. This accumulates, but slowly undergoes condensation as the organ grows older.

2. *The epithelium* upon the summit of the papilla of the frog's tongue differs from that attached to its sides, that covering the simple papillæ and on the surface of the tongue generally. They are *not ciliated cells*, from which they differ additionally in being smaller, in possessing larger nuclei, and in not being easily separated from each other.

3. *The nerves.*—1. The bundle of nerve fibres distributed to a papilla always divides into two bundles which pursue opposite directions. 2. Fine pale nerve fibres pass from the same trunk of dark-bordered fibres which give off the bundle of nerves to the papilla.

These fine fibres ramify among the *muscular fibres* of the tongue, upon the *vessels* and in the connective tissue of the tongue generally, and in the simple papillæ.

The fibres in the axis of the papilla are dark bordered, and as they ascend towards the summit the *individual* fibres divide and subdivide into finer branches. These, according to Beale, do not possess an axis cylinder as a structure distinct from the white substance, which does not cease, as stated by some, but the entire fibre divides and subdivides. "In fact, dark-bordered nerve fibres, near their ultimate ramifications, always consist of fatty albuminous material imbedded in a transparent matrix of connective tissue. The tubular membrane, white substance, and axis cylinder can never be demonstrated as distinct structures near the peripheral distribution of nerves. *The tubular membrane is nothing more than the transparent matrix in which one or more nerve fibres are imbedded.*"

These finer dark-bordered fibres again subdivide about the level of a ring or half ring of capillaries at the summit of a papilla, and form as the result of their subdivision fibres so exceedingly transparent that they are usually lost to view at this point, and in Hartmann's figure it is to this point only that nerve fibres are continued. According to Beale, however, "it is most certain that the fibres do divide and subdivide into finer fibres and much more transparent fibres at this

point, and that these again divide and subdivide and form an elaborate plexus on the summit of the papilla which has not been before described."

From the upper part of these fine nerve fibres interlacing in the most intricate manner, but so minute as to appear a granular mass except under a power of 1000 or more, fibres may be traced into a hemispheroidal layer of peculiar epithelium-like cells, or masses of germinal matter which must be regarded as a part of the nervous apparatus, and in connection with the very fine fibres constitute a "peculiar organ belonging to the nervous system." They bear the same relation to the intervening nervous structure as the nucleus of a nerve bears to its fibre or of an epithelial cell to its wall. This plexus he believes to be formed, not at the extremity of a nerve and constituting thus a terminal network, but to form part of the course of a nerve or nerves, and constituting a part of a continuous circuit or of continuous circuits.

4. Nerve fibres ramifying upon the capillary vessels, in the connective tissue and upon the muscular fibres.—They *come off from the very same trunk as that from which the bundle of purely sensitive fibres which terminate in the papillæ are derived.* Among these are many of the so-called connective tissue corpuscles and their anastomosing processes. Of these, the nerve fibres around the capillaries and in the connective tissue of the papilla are considered by Beale as sensitive, excitor, or afferent nerves, corresponding to which those supplying the muscular coat of the small arteries are the efferent or motor nerves.

5. The *muscular* fibres of the papilla are the continuations of muscular fibres in the substance of the tongue, and are excellent examples of branching striped muscle. Branches less than $\frac{1}{3000}$ of an inch in diameter exhibit the most distinct transverse markings; these, however, gradually cease, and the fibre becomes a mere line, which is lost in the connective tissue of the summit of the papilla. They are formed from the nuclei or masses of germinal matter which they contain, which move along the surface of the already formed muscular tissue, and as they move a part of their substance is converted into contractile tissue, while they themselves maintain about the same size, because of the pabulum they absorb and convert into structure like themselves.

6 The *capillaries* of the papilla of the frog's tongue are remarkable for their size, and form a complete vascular ring at the summit of the papilla. They are developed from oval masses of germinal matter situated at intervals in the transparent tissue of the wall, generally upon its external surface, but sometimes projecting slightly from the inner surface of the vessel into its interior. A most interesting point in connection with their anatomy is the presence of very fine nerve fibres forming a lax network about the capillary, and which have been previously regarded as connective tissue fibres and corpuscles. Dr. Beale has not succeeded in demonstrating lymphatics in the papillæ of the frog's tongue. The conclusions which are attained as the result of these observations are thus stated:—

1. That the fine nerve fibres ramify in the connective tissue of which the simple papillæ are composed, and that connected with these nerve fibres are oval masses of germinal matter or nuclei, which are usually regarded as connective tissue corpuscles.

2. That neither the epithelial cells of the frog's tongue generally, nor those covering the simple papillæ are connected with nerve fibres.

3. That the mass consisting of epithelium-like cells on the summit of the fungiform papilla, is connected with nerve fibres, but it is not an epithelial structure.

4. That the dark-bordered sensitive fibres constituting the bundle of nerves in the axis of the papilla divide near its summit into numerous fine branches, with which nuclei are connected. Thus is formed a plexus of exceedingly fine fibres on the summit of each papilla; from this network numerous fine fibres may be traced into the special *nervous* organ, composed of epithelium-like cells on the summit, with every one of which nerve-fibres appear connected.

5. That the bundle of nerve fibres distributed to a papilla always divides into two bundles which pursue opposite directions. The divisions may take place at the base of the papilla or at some distance from it.

6. That fine, pale nerve fibres pass from the same trunk of dark-bordered

fibres as that which gives off bundles of nerves to the papilla. The fine fibres ramify—

a. Among the muscular fibres of the tongue.

b. Upon the vessels.

c. In the connective tissue of the tongue generally, and also in the simple papillæ.

7. That the fine nucleated nerve fibres ramify freely among the delicate branching muscular fibres of the papillæ, and form plexuses or networks which exhibit no nerve ends or terminations, nor in any case does a nerve fibre penetrate through the sarcolemma or investing tissue of the fibre, or connect itself with the nuclei of the muscle. As many of the muscular fibres are so very fine and narrow the distribution of the nerves and their exact relation to the contractile tissue can be demonstrated very distinctly in the case of the muscles of these papillæ.

III. In the third paper, Dr. Beale premises that the so-called caudate nerve vesicles or cells existing in the spinal cord and medulla oblongata are neither "*cells*" nor "vesicles" in the ordinary acceptation of these words, for there is no proper investing membrane, neither are there "*cell contents*" as distinguished from the "*membrane*" or "capsule"; the so-called cell consists of soft solid matter throughout, from which the nerve fibres are prolonged and partake of its chemical nature, and not from the nucleus or outer part of the cell. Thus, in these caudate cells we recognize only the so-called "nucleus" (germinal matter) and matter round this (formed material) which passes into the "fibres" which diverge in various directions from the cell.

The special object of the author is to call attention to a peculiar appearance he has noted in these cells, whence he is enabled to draw important "inferences with reference to the connections and actions of these very elaborate and most important elements of the nervous mechanism."

In some very thin sections of the cord and medulla of a young dog, which had been slowly acted upon by acetic acid, there was observed an appearance as if the fibre were composed of several very fine fibres imbedded in a soft transparent matrix, which fibres, being stretched, had been broken transversely at very short intervals. At the point where each large fibre spreads out to form the body of the cell, these lines diverge and pursue different courses through the very substance of the cell, in front of, behind, and around the nucleus. Lines can be traced from each fibre across the cell into every other fibre passing away from it. These singular appearances the author believes due to some difference in composition of the material forming the substances of the cell in these particular lines. And the explanation of their presence he offers, is that they "*result from the frequent passage of nerve currents in these definite directions.*" He concludes that, at first, the formed material of the cell is quite soft and almost homogeneous, but by the traversing of the currents in certain definite lines, difference in composition and texture results in these lines, and after awhile they become more or less separated from one another, and insulated by intervening material.

The arguments he adduces in support of nervous currents are based upon new facts resulting from observations upon—*a*, the peripheral arrangement of the nerves in various tissues; *b*, the course of individual fibres in compound trunks, and the mode of branching and division of the nerve fibres; and *c*, the structure of the ganglion cells. And these lines across the substance of the caudate nerve cells he considers as another remarkable fact in favour of the existence of such circuits, principally on the ground of the impossibility of another explanation which would seem even plausible.

These markings, he believes, also, completely upset the view that nerve force passes centrifugally from one cell as a centre towards its peripheral destination. "So far from the fibres *radiating from one cell*, or from the nucleus, as some suppose, in different directions, all the fibres which reach the cell are complex and contain lines which pass uninterruptedly *through* it *into other fibres*. Instead of the cell being the point from which nerve currents radiate in different directions along single fibres, it is the *common* point where a number of circuits

having the most different distributions intersect, cross, or decussate. The so-called cell is a *part of a circuit*, or rather of a great number of circuits."

Dr. Beale has also reason to suppose that every single nerve fibre entering into the formation of the trunk of a spinal nerve, is really made up of several fibres emanating from different, and perhaps distant, caudate cells. The individual fibres, exceedingly fine ($\frac{1}{100000}$ of an inch in diameter, or less), after a variable distance and in variable number, coalesce to form one trunk or axis cylinder around which the protective white substance of Schwann collects; then, at the periphery, the subdivision of this dark bordered fibre again occurs until peripheral fibres result as fine as the central component fibres.

From these facts Dr. Beale ventures to conclude "that the typical anatomical arrangement of a nervous system is *not a cord with two ends—a point of origin and a terminal extremity—but a cord without an end, a continuous circuit.*"

It is important, also, to state that the author makes two distinct sets of nerve cells in connection with nervous systems, and possessing different functions—the *rounded ganglion* cells, which are the sources of nervous power, *originating* currents, and the caudate nerve cells concerned more particularly in the *distribution* of these and of secondary currents induced by them in many different directions. Whence "it seems probable that nerve currents emanating from the rounded ganglion cells may be constantly traversing innumerable circuits in every part of the nervous system, and that nervous actions are due to a disturbance, perhaps a variation in the intensity of the current, which must immediately result from the slightest change occurring in any part of the nerve fibre, as well as from any physical or chemical alterations taking place in the nerve centres, or in the peripheral nervous organs." (p. 8, a, f.)

We have given these views without comment, because we have felt that, emanating as they do from one of the acknowledged authorities of the present day, they should be widely disseminated, that they may meet the eyes of those who are qualified to confirm or refute. As to ourselves, we are not prepared to receive this interpretation of the markings described. That the transmission of an influence—term it "current," if you please—which is totally intangible so far as physical phenomena are concerned, and, indeed, incapable of existence except in connection with a living organism, should produce markings of the nature described in the apparatus through which it passes, seems to us much more unreasonable than to suppose them produced during the natural metamorphosis of germinal matter into formed material, just as the delicate longitudinal striæ seen in the otherwise structureless capillary wall is admitted by Beale to be produced in its formation from the nuclei or masses of germinal matter.

IV. The body of Dr. Browne's paper is taken up by a summary of the views already given of Beale upon the minute anatomy of the papillæ of the frog's tongue, preceded by the description of an experiment by Dr. Browne, making conclusive Bernard's view with regard to the relation of the chorda tympani to the functional activity of the submaxillary and sublingual glands. The author writes, quoting Bernard, "that a desideratum still exists, an anastomosis is formed between Jacobson's nerve and the chorda tympani, above the point on which we are to divide it; and that to ascertain whether Jacobson's nerve exercises any influence on these secretions, it would be necessary to divide the ninth pair in the immediate vicinity of its cerebral origin—an experiment of such difficulty that no physiologist has hitherto attempted to perform it." This operation was, however, successfully performed in the dog by Dr Browne, by partly drilling and partly excavating through the posterior portion of the occipital bone, and passing inward and downward a suitable instrument between the dura mater of the lateral border of the cerebellum and the corresponding portion of the interior of the skull to the situation of the nerve. This accomplished on either side, the following results were observed:—

1st. No impairment of the power of deglutition, either in eating or drinking. Lapping of fluid was performed as usual.

2d. The common sensibility of the posterior two-thirds of the posterior third

of the tongue was lost, and with it the sensibility to taste of this part. Taste was intact in the anterior two-thirds.

3d. The ducts of the submaxillary and sublingual glands having been exposed in the manner described by Bernard, the function of these glands was found perfect.

Whence it appeared that the ninth pair exerts no influence on the secretory function of the submaxillary and sublingual glands, and that the filaments derived from the chorda tympani branch of the seventh pair, alone exert the nerve influences on the secretory function of these glands.

The writer also concludes, that since deglutition is performed equally well after section of the ninth pair or glosso-pharyngeal at its cerebral origin, the impression which leads to this action is due to the gustative or lingual branch of the fifth pair and not to the former as invariably alleged. Again, since section of the ninth pair at this point is attended by *no* disturbance of *motor power* the motor influence of this nerve, admitted in deglutition, must depend wholly upon the fibres of communication received from the *facial* (seventh) and *spinal accessory* (eleventh.) J. T.

ART. XX.—1. *Croonian Lectures on Matter and Force.* Delivered at the Royal College of Physicians. By HENRY BENCE JONES, A. M., M. D., F. R. S. (*British Medical Journal*, Nos. 382, 383, 384, 385, 1868.)

2. *Address on the Relation of Food to Work done by the Body; and its bearing upon Medical Practice.* Delivered at the meeting of the British Medical Association, at Oxford. By the Rev. S. HAUGHTON, M. D., D. C. L. Oxon., F.R.S., etc. etc. (*British Med. Journ.*, Aug. 15, and 22, 1868.)

1. DR. JONES's lectures are devoted to the consideration of a somewhat recondite subject, but one of extreme importance, and which, if thoroughly investigated, especially in connection with that of the relation of food to work done by the body—a question ably treated by Dr. Haughton, and which will be presently noticed—must lead to a clearer comprehension of the operations of the animal economy, and give greater precision and efficiency to therapeutics. To fully comprehend the import of these discourses, more than ordinary attention may be required—they must be studied, not cursorily read—but we trust that no one will be deterred by this from undertaking the task, for those who accomplish it will be amply repaid for their labour.

In his first lecture, Dr. Jones points out the three stages which our ideas have undergone regarding the union of matter and force in the physical, or as he calls them, "the abiological" sciences.

The first or primitive stage is that of complete separation between the ideas of matter and force. He shows that before any knowledge of science existed, the ideas of force and matter were formed on superficial likenesses and distinctions, and that even to a late day our ideas of force or fire were entirely separable from our ideas of the three different conditions in which matter may occur—solid, liquid, and gaseous.

The second or transition stage of ideas consists in an incomplete separation between the ideas of matter and force. In this stage, force is considered as altogether separable from ponderable matter, but perfectly inseparable from an imponderable ether, or gas, or fluid, which is capable of being attached for a time to the imponderable matter. Dr. Jones traces the idea that force is imponderable matter to Kepler, who first started it, and presents the views subsequently entertained by Descartes, Leibnitz, Newton, Whewell, Young, Fresnel, Faraday, &c.

In the third, or modern stage, there is complete union, and no possibility of any separation between the ideas of matter and force. "The absolute union—the complete inseparability of our ideas of matter and force," observes Dr. J., "is most apparent in our ideas of matter and chemical force. A molecule has been endowed with a force which gives rise to its various chemical qualities,

and these never change either in their nature or in their amount. Mr. Faraday says, 'a particle of oxygen is ever a particle of oxygen—nothing can in the least wear it. If it enter into combination, and disappear as oxygen—if it pass through a thousand combinations, animal, vegetable, and mineral—if it lie hid for a thousand years, and then be evolved, it is oxygen with its first qualities. Neither more nor less. It has all its original force, and only that; the amount of force which is disengaged when hiding itself has again to be employed in a reverse direction when it is set at liberty.' (Faraday, *Researches in Chemistry*, p. 454.) If it were possible to take the ultimate atom of any one of the elements, we should find that the chemical force which constitutes and determines its nature, would be absolutely inseparable from the matter of which the element consists. For example, the ultimate atom of carbon would have the same kind of force as any mass of carbon, and it would differ in kind, and always from the ultimate atom of any other element, because of the peculiarity of its force. If the chemical force could be separated from the atom of carbon, the matter might cease to be carbon, and might become some other element, and the transmutation of metals might then be possible. The union, also, between matter and gravity is just as inseparable as the union between matter and chemical force. Matter without weight is not matter at all; the weight belongs to the matter, and cannot be taken from it. The gravity can no more be destroyed than the matter itself can be destroyed. However small the matter may be divided, yet each part will have a part of the force, and there can be no more of the force lost than of the matter. We cannot think that the matter can exist without the force of gravity being always acting or ready to act in each atom of it. Nor can we think that any portion of the force of gravity can be separated from the matter. If we mentally attempt to divide any amount of the force into its constituent portions, then every portion, however minute, of the force, must have a corresponding portion of matter to which it is inherent, and without which the force cannot be thought to exist.

"Newton's great discovery consisted in determining the existence of force in each particle of the matter of the earth and the planets; and Adams and Leverrier, recognizing the action of a force not accounted for in the matter that was known, predicted the existence of unknown matter in an undiscovered planet which was looked for and found. The great advance, however, towards the modern stage of ideas regarding the inseparability of matter and force, is owing to Young and Fresnel, who overthrew the second stage by their discoveries regarding light."

These discoveries, with the investigations of others in regard to heat, electricity, and magnetism, show that they as well as light, may be regarded as peculiar vibratory motions of ponderable matter, having quantitative relations to all other forms of motion.

"It must, however, be remembered," Dr. J. remarks, "that these three stages pass insensibly into one another; and that, in the history of these ideas in individual minds, some ideas regarding the separability of matter and force may be found in the third stage, while other ideas may still halt at the second, or never get beyond even the first stage which I have described. Thus every one may admit the inseparability of matter from the forces that cause gravitation and chemical action; whilst some may hardly be prepared even now to allow that heat is equally inseparable from matter. Still less readily may the cause of light be admitted to be inherent in ponderable matter; and few at present are able to believe that electricity and magnetism are peculiar motions, excited only in the molecules of ponderable matter. In other words, the third stage of ideas regarding the union of matter and force may to some extent be received by every one; but, in its full extent, it is only gradually becoming recognized as undoubted truth. As soon as it is admitted that force is absolutely inseparable from matter, whether gas, liquid, or solid, it will become as impossible to think that matter can consist only of centres of force, as to think that matter can be inert or void of all force. Matter must always be in a state of motion, or of tendency to, or of resistance to, motion; it can never be in a state of perfect rest."

Immediately connected with the idea of the inseparability of matter and

force, is another modern idea regarding force which is intended to be expressed first by the term conversion of force, and subsequently in succession by the terms correlation of forces, conservation of force, and lastly, by conservation of energy. This last term has been adopted in order to avoid the indistinctness and confusion which come from using the word force at one time as the cause of an effect, and at another time as the effect itself; and in order to confine ideas to the effect, which alone can be the object of experimental research. "Thus," observes Dr. J., "the word force, of the nature of which we know only that it is indestructible and inseparable from matter, is the cause of energy, and energy is the effect of force."

The following diagram may perhaps render the use of these terms more clear.

CAUSE.		EFFECTS.	
Force or power, total quantity constant as that of matter.	= *Vis viva* / *Vis lata*	= Actual energy = Motion / Potential energy = Tension	= Work.

The idea of the conservation of energy is, that the sum of the actual and potential energy in the world is constant. The force, or, as it is better called, the actual energy, that can be put into the cannon ball, is exactly equal to the latent or potential energy in the gunpowder, and this depends on the chemical force in the oxygen, hydrogen, and carbon. The ball gains only what the powder loses. As the potential energy, or tension, decreases, the actual energy, or motion, increases, and no loss or gain in the total amount of motion and tension can occur. Whatever the form of motion may be, it can only come either from some other form of motion or from some form of tension.

"It has been Dr. Joule's great work to exhibit experimentally the measurable relation between heat and gravity. He has determined that a certain amount of one kind of motion does produce an equivalent quantity of another kind. He proved that 772 pounds weight of matter falling one foot gives rise to enough heat to raise a pound of water one deg. Fahr. in temperature. He called the unit of mechanical motion one pound weight falling one foot=one foot-pound, and the unit of heat that quantity which raises one pound of water one degree Fahr.; then the mechanical equivalent of heat is 772 foot-pounds.

"The equivalence of other forms of energy has yet to be determined by experiment. Meanwhile, according to modern ideas, the different forms are so related to one another, that none can be lost, and none can be produced except by passing into or out of some other form of energy."

Dr. J. sums up the present state of our knowledge in the abiological sciences regarding matter and force in the following formulæ: "Where matter is, there force must be, showing itself in motion, tension, or in resistance. Without matter, no kind of motion, nor tension, nor resistance occurs."

In his second lecture Dr. Jones considers the matters and forces in those sciences—the biological—in which the idea of life is concerned, and he shows that our ideas regarding the union of living matter and living force, have passed, or are passing through the same three stages that they have done in the physical sciences. Dr. J. shows by quotations from our oldest records that "in the earliest ideas of all nations and probably of all individuals, no doubt whatever exists as to the entire separability of the ideas of matter and of vital force; and the first stage of ideas in the biological sciences is identically the same as the first stage in those sciences into which the idea of life does not enter.

"As the *second* stage of ideas," he continues, "in the abiological sciences consisted in the assumption of an imponderable matter, which was considered to be separable from the ponderable matter, and diffusible through it, giving rise to the phenomena of force in every part; so the second stage, or partial separation in the ideas of living force and matter, is marked by the assumption of a living imponderable gas or fluid pervading the ponderable matter. This stage, from the renown of him who gave it the greatest support, may well be called the Hunterian stage."

The idea of a subtile æthereal fluid diffused through the frame, enabling it to show all the phenomena of life, was taught by Hoffman, whilst others assumed

that, instead of a single vital fluid capable of doing all work, there were many different vital fluids, each capable of doing its own work and no other. The most remarkable of these was the nervous fluid.

"Another very remarkable vital fluid was considered to be a chemical agent, an elementary principle, or highly attenuated substance, which, among its other singular and remarkable properties, has that of imparting to the constituent matters of the animal frame new chemical affinities between it and the surrounding elements, and thereby protecting the living fibre from dissolution, or giving them other properties which, without this vitalization, they would not possess."

"The progress of animal chemistry," Dr. J. very justly observes, "proves more and more clearly that the matter in the body has no special chemical properties peculiar to life; but that matter within possesses the same chemical energy which it possesses out of the body. Life has no power to create or destroy any chemical force in the matter of living things; but the very slightest difference in the circumstances under which any chemical action occurs, produces a variation in the effects that are produced. Ultimately, when all the circumstances under which vital chemical actions occur are fully made out, there will be found to be no difference between these actions and those which can be made to take place where no influence of life can be supposed to exist."

"Another vital fluid, or principle, has been assumed to account for the phenomena displayed at the beginning of life in animal and vegetable bodies. Dr. Prichard says: 'This vital principle assumes the character of a plastic or formative power. It presides over, and sets in action, the different processes by which growth and organization are effected, and gives form and modification to the exponent parts of the animal and vegetable body, and contributes afterwards by a preserving influence to the maintenance of its existence for a definite portion of time. This doctrine ascribes to a thing which is supposed to be merely a species of matter highly attenuated, properties and agencies which belong to the highest power and the highest intelligence.' It appears, then, that, in the biological as in the abiological sciences, ideas of the union of matter and force have gone, or are going, through two identical phases. As in the abiological sciences the earliest ideas of matter were quite separate from the ideas of force, so vital force, in the first stage of our ideas, was originally pure spirit, void of all materiality, perfectly separable from matter."

In his third lecture, Dr. Jones shows that the third stage of ideas regarding the union of matter and force is growing up, and that it gives promise of fruit far beyond any we have hitherto gathered in physiology, pathology, and therapeutics.

"The general ideas regarding the union of matter and force in the biological sciences, have not as yet," Dr. J. observes, "got beyond the second or Hunterian stage; and there are many who think that the first stage, which consists in the complete separability between matter and living force, still represents the whole truth. The third stage, or complete union between the ideas of matter and living force—that is, the utter inseparability of one particle of living force from the matter in which it has been placed, is as yet in its infancy, and cannot be yet subjected to the examination it will have to undergo.

"We are only just entering upon the inquiry how far our ideas of conservation and correlation of energy can be extended to the biological sciences. We are only just beginning to ask how far a balance can be struck between the income and outgoing of all the energy which vegetables and animals possess in health and in disease. The quantity and quality of the energy that comes in, and the quantity and quality of the energy that goes out of the living thing, are questions in every respect as inseparable from the progress of biology, as the quantity and quality of the matter that enters into or is thrown out of any system. The slight progress that has hitherto been made is seen in the fact that there are many persons at present able to rest in the belief that the inseparability and conservation of matter and force are our main principles and our best guides in the abiological sciences; whilst most persons think that in the biological sciences the perfect or imperfect inseparability of matter and force, and the constant creation and annihilation of energy, are most likely to be the true foundations on which the sciences that include life must be built. But, if this be

so, then the creation and annihilation of force must be established by positive proof, and must not rest only on assumptions which are directly opposed to the most certain knowledge we possess regarding matter and force in other branches of science.

"We know now that in all living things no separate or peculiar matter is present. The stuff which takes part in the living actions, and the forces which are inherent in that stuff are there, and indestructible and inseparable. Inorganic matter and inorganic force always exist together in living things; so that, if a separable living force be also present, then we must admit that two totally different laws of force must be in action at the same time in the same matter. The unity of nature will at least be preserved by our hesitation to admit the assumption of a force capable of creation and annihilation, until some very conclusive evidence be obtained that there actually is in living things such a force or forces capable of being separated entirely from the matter of which they are made. Until this be proved, let us inquire how far the third stage of ideas regarding the union of matter and force and the principle of the conservation of energy opens new paths for investigation, and gives us new glimpses of truth. What are the actual and potential energies which enter into the body? To what motions do these energies give rise there? How do these motions leave the body? Matters in a state of tension, and ready for chemical motion, are constantly going into the body in the food and air. The quantity of active and latent energy which goes in, ought exactly to balance the quantity which comes out, deducting that which remains latent in the chemical substances, or becomes active in the actual warmth of the body itself. The chemical changes in the matter within the body (that is, the decrease of potential energy or tension) give rise to different forms of motion. These motions appear as the functions or work of the body. Two chief kinds may be distinguished—first, motion in great mass, as mechanical work, etc.; secondly, little mass, or molecular motion, as heat, electricity, nutrition, etc. A little mass of carbon and of oxygen contains a certain amount of tendency to move, that is, of potential energy. These molecules, as soon as they can, move together, and the motion produced must continue in some form until a state of tension or potential energy again results. The latent force of the nourishment is most easily measured by determining the amount of latent heat which the food contains. In order to do this, a known amount of substance is burnt, and the amount of heat produced is determined; and as the mechanical equivalent of heat is known, the equivalent amount of work which the substance can do may be calculated. By far the greater part of the potential energy or tension which goes in is ultimately changed into warmth. Other modes of motion, as electricity and mechanical work, take but a small part of the total income. The balance-sheet at present can give an idea of the form which the account will ultimately take; but it cannot tell the items with any approach to accuracy. The difficulties which surround the determination of these items at present may be seen by looking for a few moments where our knowledge now is regarding the origin of muscular motion.

"According to the earliest ideas, muscular motion was produced by the soul. According to transition ideas, the motion was considered to be created by a definite something, a vital force or fluid, capable of being increased or diminished according as stimulants (nervous or other) acted on it or not; and finally, capable of quitting the matter of the muscle a short time after the body was dead. The Hallerian irritability was the best representative of this stage of ideas. According to the latest ideas, the origin of the motion must be some antecedent equivalent motion. This is looked for in the chemical changes in the nitrogenous or the non-nitrogenous matter of the contractile texture or surrounding blood. 'No one,' says Dr. Frankland, 'possessing any knowledge of physical science, would now venture to hold that vital force is the source of muscular power. An animal, however high its organization, can no more generate an amount of force capable of moving a grain of sand than a stone can fall upwards, or a locomotive drive a train without fuel.' Professor Liebig and Playfair, and others say, that the chemical changes in the nitrogenous matter of the muscles are the cause of motion. Professors Frankland, Fick, and others

say that the mechanical work is much greater than can be accounted for by the amount of change in this matter, as measured by the urea produced. They determine the amount of mechanical work done in a given time, and they translate it into its equivalent of heat, weighing also the urea produced in that time. By burning a known weight of muscle out of the body, they determine how much heat it can produce; and from this they can calculate how much muscle must be burnt in the body to give an amount of heat equivalent to the mechanical work done in the given time. They then calculate what amount of urea this weight of muscle would produce. By comparing the actual amount of urea produced with the calculated amount, it appears that only one-fifth of the work can come from chemical change in the nitrogenous texture of the muscles. Four-fifths of the work must arise from the chemical action going on in the non-nitrogenous matters in the muscles or in the surrounding blood.

"The experiments made by Dr. Parkes most completely confirm the view that the motion of the muscle during exercise does not bear any relationship to the amount of chemical disintegration in the albuminous substance of the muscle. Indeed, he suggests the opinion that the action of the muscle is not connected with disintegration, but with formation; that, when it is in exercise, it increases; and, when it is quiescent, it lessens in bulk; that is, that it more rapidly disintegrates during rest that during exercise. This view can only be proved by a vast amount of further experimental research.

"When this question, which regards the value of this one item in the expenditure and income of matter and force, is solved by experiment, there will be left still more difficult problems—as, for example, how this conversion of heat into contraction of muscular fibre takes place; how the nerves are made to be able to increase or lessen the conversion of latent into active energy at will. This most extensive and important inquiry, which the doctrine of the conservation of energy has opened to our work, is good evidence that the third stage of ideas on the union of matter and force is beginning to be received in physiology.

"What the worth of these ideas is may be seen in the comparatively simple problem of the source of animal heat, when the doctrine of the conservation of energy is admitted. Whether animal heat arises from nervous force or from chemical action has been a point as disputed as whether voltaic electricity arose from metallic contact or from chemical action. The dispute is ended in both instances by the admission of the doctrine of the conservation of energy. If the animal heat comes from nervous force, or the electricity from metallic contact, then what is the equivalent of potential energy that gives these their actual energy? Unless the creation of force be assumed, the equivalent in actual or potential energy must be forthcoming. In the case of animal heat, it may be said that the nervous force comes from an equivalent energy of nutrition; but then the further question must be answered: Whence does this energy of nutrition come? And this brings us ultimately to the chemical force which gives the potential energy to the matter that enters the body. This is the prime origin of the motion which we call animal heat.

"The different kinds of apparatus or organs which the animal possesses for the conversion of energy determine in what form of motion the expenditure of energy can take place. The brain, the nerves, the muscles, the electric organs, the textures in general, all these are machines set in action chiefly by the potential energy or tension in the food, textures, and air; the supply of oxygen, hydrogen, and carbon being the first necessary condition.

"The mechanical, chemical, nutritive, muscular, and nervous motions are so related, that it is most difficult to separate the action of any one motion, even the simplest which can occur in the human body. When these motions are so increased or diminished as to constitute disease, then the difficulty of isolating any one motion becomes by no means lessened. Still, even in disease, the doctrine of the conservation of energy can enable us to make at least as great an advance as was made in our ideas and language when the doctrine of phlogiston, or the hypothetical inflammable principle which was thought to possess a power of levity, was given up.

"Vital force in disease must cease to be regarded as an imponderable material capable of varying in quantity and quality. It cannot be made more active

by stimulants, or be kept up by whips, whether ponderable as alcohol, æther, ammonia; or imponderable as heat, light, electricity, friction; nor is it capable of being made less active, or let down or untoned by excessive use or by withdrawal of the stimulants.

"When any excess of motion takes place, we must have an answer where the equivalent of that motion comes from, and whither it will go. Our ponderable and imponderable whips and stimulants are bound up with the matter, and produce more active motion according to the latent energy which the matter itself possesses. When any want of motion occurs, we must ask whence the deficiency of motion comes. Is there a want of matter possessing latent energy? or is there increased resistance to the conversion of latent energy into active motion?

"It may be said that this is only a verbal alteration; but it is, in truth, an alteration in the foundation on which our knowledge is based. It is an alteration which represents the direction in which science is advancing; and it is an alteration which not only marks the advance, but renders further progress more certain and more easy."

Dr. J. illustrates the importance of the change in our views regarding the union and conservation of matter and force by the phenomena of inflammation, and observes: "The principle of the conservation of energy requires that increased oxidation and nutrition in the inflamed part cannot arise except from an equivalent quantity of some form of motion, or some form of potential energy reaching the part. The same principle also requires that the inflammation must continue until the increased motion passes off in heat, or in pus, or in some other form of motion. Thereby the increased motions subside to the amount which is called health.

"The doctrine of the conservation of energy and the inseparability of matter and force will lead to an entire change not only in physiology and pathology, but also in that most practical part of medicine, therapeutics. At present, our knowledge is very confused and uncertain as to how and where medicines act. We almost believe that our medicines have the power not only of creating, but of annihilating force; and we almost think that they are able to select the part on which they will act, whilst they leave other parts of the body entirely free from their presence. From our want of knowledge how and where the effects are produced, the greatest possible difference of opinion exists as to the action and work of all the different classes of medicines—stimulants, sedatives, tonics, alteratives, specifics, evacuants. We are almost led to say that stimulants create force, because they increase contractility and sensibility; that sedatives destroy force, because they diminish contractility and sensibility; that tonics create force, and specifics destroy force, and alteratives change force. But the law of conservation of energy requires us to believe that no food and no medicine can cause the creation or the destruction of the slightest particle of energy. The amount of conversion of potential into actual energy may be made more or less. The conversion of one kind of motion into another kind may be diminished or increased, but no annihilation nor creation of force is possible.

"We must cease to regard the so-called imponderable heat, or its opposite cold, friction, or its opposite rest, electricity, light, etc., as entities that can be increased or diminished as remedies; and we must begin to look at them as modes of motion of the particles of matter in the different parts where they act. These modes of motion, by their correlations with the motions of oxidation and nutrition which are going on in the affected part, determine whether more motion or less motion should result.

"The medicines which are taken into the body have the same incapability as food to create or annihilate force; but they possess chemical energies by which, wherever they go, they take part in the motions of oxidation and nutrition which are going on there; and, according to their chemical properties, they add to the motions, or increase the resistance to the motions that constitute disease.

"The questions, then, which must be answered before we can obtain clear ideas of the actions of medicine in the body are: 1. What are the different motions which occur in the body? and how are these different motions related

to one another? and 2. How do different agents or medicines increase or diminish these different motions which occur in the different organs and textures?

"Assuming that any energy which shows itself in any of the motions of the body must arise from some other form of energy, and that this must ultimately be traced up to the chemical energy which enters with the food and air, then the action of medicines in increasing or diminishing or altering the action of oxygen in the different textures must be at least one of the most important questions in therapeutics."

Dr. J. illustrates these views by the action of acids and alkalies, which he shows are capable of taking a part in oxidation, and refers to his own experiments and those of Dr. Dupré, showing the rapidity with which certain medicines pass into every texture of the body (see No. of this Journal for July, 1865, p. 202), and maintains that they carry with them whatever force they possess, and thence infers that our present ideas of the local action of medicines are far two restricted.

"From these glimpses," he says, "into the physiology, pathology, and therapeutics of the future, each of which might well have been the subject of many lectures, it is evident that a great change will take place in our ideas in the biological sciences when we follow the progress of knowledge in the abiological sciences. As the abiological sciences have passed, or are passing, through three different stages of perfect and imperfect separation and perfect union of ideas regarding matter and force; so it is reasonable to expect that ultimately we shall pass through the same three stages of ideas regarding the union of matter and force in the biological sciences; and, if so, we shall arrive at an idea of life which will be based on the perfect union of matter and force.

"If biology be disposed to profit by the progress of the other sciences, we must endeavour to search for vital force, as the most peculiar of all the motions of which matter is capable. It must be able to arise from other motions and be able to give rise to other motions; and it must be altogether as incapable of destruction and creation as the abiological forces themselves. It may well be said, what can be the nature of this motion? how can it be understood? The answer must be the same as that which we must give even now regarding the nature of the motion of the simple or compound atoms of matter which we call electricity or magnetism, or even light or heat. How many among us at present have a clear idea of the motion of the simple molecules of matter which we call heat, or even gravitation and crystallization? Whilst we are unable to grasp the marvellously complex double polar motion of compound molecules which constitutes electricity, can we expect to be able to form an idea of the most complex of all the motions of matter from which the mind turns away to the image of some aërial or æthereal spirit, with large wings and larger powers; or rests satisfied with an imponderable gaseous or liquid matter diffused through living liquids, or temporarily attached to more solid granular matter?

"Notwithstanding our ignorance, let us attempt to gain knowledge by following in the footsteps of the abiological sciences. Whatever form of motion or tension proceeds from the body, let us regard it not as created or destroyed, but as the representative and equivalent of that energy which went into the body. Let us consider that the balance of in-going and out-coming energy of the body is exactly comparable with the balance of the in-going and out-coming matter; and let us remember that these balances are inseparably dependent the one on the other."

2. Dr. S. HAUGHTON, in his eloquent address, presents some highly important views on the subject of the *relation of food to work done by the body*. "It is admitted," he observes, "that man and other animals possess a double life, *animal* and *organic*, presided over respectively by two distinct, though correlated, centres of nervous force; of these, one *thinks, moves*, and *feels*; the other merely *cooks*, receiving the food supplied, changing and elaborating it into elements suitable for the use of the animal life." And he further observes, that "it is a simple matter of fact, and of every-day observation, that all these forms of

animal work, are the result of the reception and assimilation of a few cubic feet of oxygen, a few ounces of water, of starch, of fat, and of flesh.

"During childhood and youth, the food that we eat is used for the double purpose of building up the tissues of the bones, the muscles, the brain, and other organs of the body; and of supplying the force necessary for work done, whether mechanical or intellectual. In adult life, the first use of food almost disappears, for the bones, the muscles, the brain, and other organs, have already reached their full development, and act simply as the media of communication between the food received and the work developed by it.

"Let us take, as illustrations, the muscles and brain, regarded as the organs by means of which mechanical and intellectual work is done. These organs resemble the piston, the beam, and the fly-wheel of the steam-engine, and, like them, only transmit or store up the force communicated by the steam in one case, and by the products of the food conveyed by the blood in the other case. The mechanical work done by the steam-engine must be measured by the loss of heat experienced by the steam in passing from the boiler, through the cylinder, to the condenser; and not by the loss of substance undergone by the several parts of the machinery on which it acts. In like manner, the mechanical or intellectual work done by the food we eat is to be measured, not by the change of substance of the muscles or brain employed as the agents of that work, but simply by the changes in the blood that supplies these organs—that is to say, undergone by the food used, in its passage through the various tissues of the body, before it is finally discharged in the form of water, carbonic acid, or urea. * * *

"The food consumed in twenty-four hours, including air and water, undergoes a series of changes of a chemical character before leaving the body, in the form of one or other of its excretions. Some of these changes develop force, and others expend force, but the algebraic sum of all the gains and losses of force represents the quantity available for work. This work must be expended as follows: 1. The work of growth (*secular*). 2. The work of maintaining heat (*periodic*). 3. Mechanical work (*periodic*). 4. Vital work (*periodic*).

"During childhood and youth the work of growth is positive, for a certain proportion of the food used is employed in building up the tissues of the body instead of being expended in actual work; it is, in fact, 'stored up' in the body, as *vis viva* is stored up in the fly-wheel of machinery, and constitutes a reservoir of force that may be called upon at an emergency requiring sudden expenditure of force, or in case of illness, or in the gradual wasting of old age.

"In adult life, and in old age, the work of growth ceases completely, except so far as it is necessary to repair, from day to day, the small wastes of the organs employed in work; so that nearly the whole of the food employed is expended on the *periodic* work of the body.

"Hence we can readily see the reason for the aphorism, which asserts that food is more necessary for the young man than for the old, and more required by those of a lively disposition, either of mind or body, than by others."

It was demonstrated by Lavoisier that the source of animal heat is to be found in the combustion of the carbon of the body by the oxygen of the air received into the lungs by respiration.

"As soon as it was satisfactorily established by Lavoisier and his successors that the natural combustion of carbon and hydrogen in the blood was sufficient, and rather more than sufficient, to account for the animal heat, it became a matter of great interest to physiologists to ascertain, if possible, how much of the work developed in the blood by chemical changes is employed in producing animal heat, how much in mechanical work, external and internal, and how much in vital or mental operations."

From numerous observations, some of which were made by Dr. Haughton on the daily labour of hodmen, paviors, navvies, and peddlers, he has obtained the following mean:—

"Daily labour of man=353.75 ft. tons.=109549 kilometres.

"This quantity of work is the exact equivalent of the work done by a man of 150 lbs. weight in climbing through one mile of vertical height, and is, as I have already shown, less than one-eighth part of the work expended in producing and maintaining animal heat.

"Even if we add to the external muscular work that of circulation and respiration, which may be estimated at 133 foot-tons, the whole work done by the muscles, voluntary and involuntary, of a hard-worked labourer will amount to less than one-sixth of the work expended in maintaining the temperature of his body at 100° Fahr.

"I was led to believe, from my investigation as to the quantity of urea excreted in various diseases, that a certain minimum quantity equivalent to 2 grs. per pound avoirdupois of body weight, was excreted quite independently of muscular exertion, and I proved that death was preceded in many chronic diseases by a fall in the urea excreted to 2 grs. per pound. These investigations were made chiefly on patients dying of advanced kidney disease, in which the excretion of albumen had nearly or altogether ceased, and on patients dying of phthisis."

"If these views," says Dr. H., "be well founded, it is plain that part only of the urea excreted can be regarded as due to muscular exertion, for 2 grs. per lb. (or 300 grs. for a man weighing 150 lbs.) must be set aside as a constant due to vital work, independent of muscular work altogether. Hence it would follow, supposing the muscular exertion to be measured by the increased excretion of the urea produced by it, that the urea will not increase as fast as the muscular exertion, but it ought to increase regularly, although at a slower rate."

To settle this important question, Dr. H. ascertained by repeated experiments, that the amount of his own excretion of urea (under ordinary conditions of exercise, which did not exceed five miles per day) ranged from 465.09 grs. per day to 537.47 grs., the mean being 501.28 grs. He then compared this with the average found from several days of unusual muscular exertion. The average work done each day, for five consecutive days, was 20.74 miles of horizontal walking, "the result of which upon the urea excreted was to be compared with the result already mentioned, as a physiological constant determined under circumstances in which the daily muscular work never exceeded five miles of horizontal walking."

In order to determine the urea, he collected all the urine passed, and kept one-fifth part of it; and at the close of the fifth day examined the mixture formed from the five days' urine. It was found to contain 501.16 grs. of urea per day—a result identical with the physiological quantity previously found by him under totally different conditions, viz., 501.28 grains.

"It might be objected," Dr. A. remarks, "to the preceding reasoning that there can be no doubt as to the capability of the combustion of proteinic compounds represented by 501.28 grs. of urea excreted to produce mechanical force sufficient to explain the muscular exertion of walking 20 or 21 miles per day, as may be shown in the following manner:—

"1. The urea excreted bears to the proteine consumed the proportion of 24 to 79, as appears from their chemical compositions, viz.—

Urea . . .	$C_2H_4N_2O_2$ . . .	60
Proteine . .	$C_{36}H_{27}N_4O_{12}$ . . .	395

"2. In 100 parts of proteine there are 53.7 parts carbon, and 7 parts of hydrogen; the total heat due to the combustion of 1 grm. of proteine is, therefore,

	Heat-units.
0.537 gramme of carbon	4.3389
0.070 gramme of hydrogen	2.4123
	6.7512

"This number, 6.7512, represents the maximum quantity of heat units[1] that could be produced by the combustion of 1 grm. of proteine; but the term depending on hydrogen in it should be reduced to $\frac{8}{9}$ths of its amount in consequence of the hydrogen already combined with oxygen in the proteine. Hence we find—

[1] Heat unit = 1 kilog. of water raised 1° C.

Combustion of 1 *gramme of Proteine.*

	Heat-units.
Carbon	4.3389
Hydrogen	1.3402
	5.6791

"3. In 100 parts of urea there are 20 parts of carbon, and $6\frac{2}{3}$ parts of hydrogen; the total heat, therefore, due to the combustion of 1 grm. of urea is—

0.20 grm. carbon	1.6160
0.067 grm. hydrogen	2.3089
	3.9249

"The term depending on hydrogen in this result, should be reduced to $\frac{1}{4}$, in consequence of the hydrogen already combined with oxygen in the urea.

Hence we find—

Combustion of 1 *gramme of Urea.*

Carbon	1.6160
Hydrogen	1.1544
	2.7704

"4. From the three preceding statements it is easy to see that, for every gramme of proteine consumed, 0.8416 heat-units are contained in the urea excreted; so that the digestion of 1 grm. of proteine gives out 4·8375 heat units.

"It is easy to see that 501.23 grs. of urea excreted correspond to 1650 grs. of proteine in the food, or to 106.92 grms.; and the total work due to the digestion of this quantity of food may be found by multiplying it by the 'digestion coefficient' already found, and by 423, which is Joule's coefficient for converting heat-units into kilogrammeters. Hence we have—Work due to production of 501.28 grs. of urea=$106.92 \times 4.8375 \times 423 = 218786$ k. m.=704 ft. tons.

"This amount of theoretical work produced by nitrogenous food is more than double the work actually done during the walking excursion.

"The average work was 20.74 miles horizontal per day, which may be considered as the exact equivalent of lifting my weight (knapsack and clothes included=150 lbs.) through one mile of vertical height. Hence the work actually done by me was

$$\frac{150 \times 5280}{2240} = 354 \text{ foot-tons.}$$

"I have elsewhere shown that the work done by the heart per day amounts to 122 foot-tons, which should be added to the external work, as well as the unknown work due to the muscles used in respiration, probably amounting to one-sixth of the heart's work, or 21 foot-tons; adding these quantities, we find—

External work	354 foot-tons.
Circulation and respiration . . .	133 "
	487 foot-tons.

"This quantity represents 69 per cent. of the applied work, which was shown to be 704 foot-tons.

"The amount of muscular work accounted for is 354 foot-tons, which is almost exactly half the whole theoretical work supplied by the food that goes to form urea, viz., 704 ft. tons; but it has been already shown that 2 grs. of urea per pound of body weight is required to maintain the vital work, including circulation and respiration; this would give from 240 grs. to 260 grs. of urea out of the 501 grs. available for vital work, so that one-half of the available work may be considered as expended on vital work, and the other half as expended on external muscular work. This supposition, however, requires us to believe that the muscles act without loss by friction. This is not admissible, for I have elsewhere endeavoured to show that there is a loss in the force applied by the

muscles of various animals in consequence of the friction of their tendons, amounting—

In man to	35 per cent.
In the mastiff, to	41 "
In the kangaroo to	61 "

"Hence it may be regarded as certain that the available force represented by 501 grs. of urea is not sufficient to account fully both for vital work and for the external mechanical work expended by me during the experiments just described."

Liebig and his followers assigned to nitrogenous food the duty of providing the force necessary for the production of muscular work, by supplying the waste of muscular tissue, which waste was supposed to be represented by the urea of the kidney secretion; while they supposed the farinaceous and fatty foods to provide the amount of animal heat required by the body; while their opponents deny that nitrogenous food contributes any portion of the force employed in muscular work. "The truth," Dr. H. says, "as is usual, lies between the two extreme hypotheses, and we are now compelled to admit that a given development of force, expressed in animal heat, muscular work, and mental exertion, may be the effect of several, perhaps many, supposable supplies of digested food, farinaceous, saccharine, fatty, and albuminous."

Lavoisier supposed, in his earlier investigations, that animal heat was developed by the combustion of carbon and hydrogen in the lungs, while Liebig and his followers supposed the muscular waste to be developed in the substance itself of the muscles which were its instruments. Both these doctrines are now repudiated by physiologists, and the view proposed by Mayer, of Heilbronn, has been accepted, that the blood itself is the seat of all the chemical changes that develope force in the body. "No two classes of animals," observes Dr. H., "can well differ more from each other than the cats and ruminants, one of which is intended by nature to eat the other. They differ in all respects as to food, the cats requiring a supply of fresh meat and blood for their health, and the ruminants being exclusively vegetable feeders; yet in both classes we find a great development of muscular power and of rapid action of the muscles, qualities alike necessary to the pursuer and to the pursued. There can be no doubt that muscular work is developed in the cats from the combustion of flesh, and in the ruminants mainly, if not exclusively, from farinaceous food. It is, however, worthy of remark that the muscular qualities developed by the two kinds of food differ considerably from each other. The hunted deer will outrun the leopard in a fair and open chase, because the work supplied to his muscles by the vegetable food is capable of being given out continuously for a long period of time; but in a sudden rush at a near distance the leopard will infallibly overtake the deer, because its flesh food stores up in the blood a reserve of force capable of being given out instantaneously in the form of exceedingly rapid muscular action. In conformity with this principle, we find among ourselves an instinctive preference given to farinaceous and fatty foods, or to nitrogenous foods, according as our occupations require a steady, long-continued, slow labour, or the exercise of sudden bursts of muscular labour continued for short periods."

A number of examples are given by Dr. H. in illustration of this principle, which we have not space here to insert.

In conclusion Dr. H. shows the application of theory to diseased conditions of body, and takes as examples, 1, typhus fever; 2, cholera Asiatica; 3, diabetes mellitus.

1. In *typhus fever*, he observes, "a prominent symptom is the remarkable elevation of temperature, accompanied by an increased excretion of urea and carbonic acid by the kidneys and lungs, indicating (as no food is taken) an increased morbid metamorphosis of the blood and tissues. The temperature frequently rises to 104° Fahr., representing an increase of upwards of 5° Fahr. above the normal temperature.

"If we knew the cause of this increase of temperature, or rather of the increased metamorphosis of which it is the sign, we should know the cause of

typhus fever, and learn to combat the disease on rational grounds. At present the cause is unknown, and therefore the physician is forced to treat the symptoms as they appear, instead of attacking the cause of the disease. Let us examine for a moment the terrible significance of the symptoms.

"Your patient lies for nine or ten days, supine, fasting, sub-delirious, the picture of weakness and helplessness; and yet this unhappy sufferer actually performs, day by day, an amount of work that might well be envied by the strongest labourer in our land.

"The natural temperature of the interior of the body is 100° F., while the temperature of the corresponding parts in typhus fever is at least 105° F. This seems at first sight a small increase—only five per cent. of the whole; but it is in reality 2½ times as great as it appears, and actually amounts to 12½ per cent., or *one-eighth* part of the total animal heat. For the total quantity of heat given out by the heated body is proportional (from Newton's law of cooling) to the elevation of its temperature of equilibrium, towards which it tends. If we suppose this equilibrium temperature to be 60° F., then the quantities of animal heat given out in typhus fever and in health will be in the proportion of 45 to 40, showing that the animal heat of typhus exceeds that of health by *one-eighth* of its amount.

"We have already seen that the work due to animal heat would lift the body through a vertical height of eight miles per day; and it thus appears that an additional amount of work, equivalent to the body lifted through one mile per day, is spent in maintaining its temperature at fever heat.

"If you could place your fever patient at the bottom of a mine, twice the depth of the deepest mine in the Duchy of Cornwall, and compel the wretched sufferer to climb its ladders into open air, you would subject him to less torture, from muscular exertion, than that which he undergoes at the hand of Nature, as he lies before you, helpless, tossing, and delirious, on his fever couch.

"The treatment of this formidable disease in former times consisted of purging, vomiting, and bleeding the patient, with the view of eliminating an imaginary poison, and so helping nature to terminate the disease.

"In modern times, thank God, the physician either does not interfere at all, or adopts the rational process of retarding the disintegration of the tissues consumed to supply the fever heat, by furnishing in their stead fuel, in the form of wine and beef-tea, sufficient to maintain the increase of temperature imperiously required. This practice may be justly considered rational, because the condition of the circulation admits of its application, and it is considered good, because it has been rewarded with success in the hands of the skilful clinical physician. In concluding this sketch of the prominent symptom of typhus fever, and as an illustration of the eagerness with which every possible combustible in the body is made use of, I may mention, on the high authority of Dr. Stokes, of Dublin, that the very urea excreted by the kidneys is not permitted to leave the body without first paying its tax to fever, by being burned into carbonate of ammonia, thus rendering the urine of an advanced case of bad typhus fever eminently alkaline."

2. "*Asiatic Cholera* presents, as every one knows," Dr. H. remarks, "three distinct stages: 1. The premonitory stage of diarrhœa. 2. The stage of collapse. 3. The stage of consecutive fever.

"The stage of collapse exhibits the following symptoms: Vomiting or purging, muscular cramps, suppression of bile and urine, lowering of body temperature to 95° F., extreme prostration of strength, extremities pulseless, and face Hippocratic.

"When death occurs during collapse, the following symptoms are usually found on careful examination of the corpse: The temperature rises to 103° F., the muscles give out their characteristic susurrus CCC, and exhibit spontaneous movements, the whole train of symptoms producing the effect of a ghastly attempt at resurrection.[1]

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[1] "It is startling, on making a post-mortem examination of a cholera patient alone, and by candle-light, to witness, on the first free incision of the scalpel, the hand of the corpse rise slowly from its side, and place itself quietly across its breast."

"In this disease we have phenomena respecting animal heat, the very reverse of those found in typhus fever; the body performing one vertical mile short of its daily work, instead of one mile in excess. The prostration of strength resulting from this deficient combustion is so great, that death is often caused by bringing the patient to hospital in a cab instead of upon a stretcher, by his walking up a dozen steps into his ward; and sometimes even fatal results have followed a sudden effort to sit up in bed to vomit.

"The rise of temperature after death, and the continuance of muscular susurrus and motion, tend to prove that the impeded circulation, which is the prominent symptom in cholera collapse, is due to constriction (probably vasomotor nervous) of the capillaries, in consequence of which the muscles are deprived of their supply of freshly-oxidized blood, the result of which is necessarily contraction and cramp, which produces the excessive agony that characterizes this disease.

"All authorities on cholera, whether their object be to 'impede' or to 'assist' nature, are agreed that medicines, whether astringent or purgative, are not only useless, but dangerous, in the stage of collapse.

"It is useless to give alcoholic fuel to restore the loss of animal heat, for there is no circulation to cause the oxidation of the hydrocarbons. It is equally useless and more dangerous to give opium, to check the remaining purging that exists; for if vomiting have ceased, your acetate of lead and opium pills lie as if in the stomach of a corpse, and at the termination of collapse your patient enters upon the consecutive fever with perhaps a dozen grains of opium in his stomach, placed there like an explosive shell by your ill-timed zeal, and rapidly passes into a comatose condition, from which he never for a moment rallies. His death is always accredited by the registrar to cholera morbus, and not to opium.

"Purgatives and emetics[1] in cholera collapse effect the same object as opium, but with greater rapidity. In the stage of blue collapse the chances of life and death are almost exactly equal, and the slightest additional loss of force turns the wavering beam on the side of death. The effects of a brisk purgative or emetic (if they act) upon a patient unable to climb a dozen steps, or sit up for a quarter of an hour without fatal syncope, may be easily imagined; and the use of them cannot be justified by any arguments borrowed from right reason.

"A remarkable though transient improvement takes place in collapse by the injection of warm water (brought to the specific gravity of serum by the addition of mineral salts) into the veins or bowels; the patient loses the cramps, feels that he is about to recover, speaks to his friends, and often transacts whatever business is necessary, but speedily falls back into collapse. The improvement in his condition is altogether due to the temperature of the fluid injected, which supplies for a brief period the deficient animal heat, permits a partial oxidation of the blood, restores the capillary circulation in the muscles, and so destroys their cramp; and, by supplying the deficient work required, removes for the moment the fatal prostration of strength. Any one who has witnessed the remarkable effects of warm liquids thus injected in cholera collapse must feel that recovery would be certain if the improvement could by any possibility be made permanent.

"Our hopes for the future, as to the treatment of cholera, lie, as I believe, in the direction of supplying to the body directly its lost animal heat. I have witnessed the happiest results from an injection of warm salt water into the bowels, assisted by hand friction of the surface with turpentine and chloroform, and the application of bags of hot salt along the spine; in cases treated in this manner we may expect to witness cessation of muscular cramp, restoration of perspiration to the skin, with increase of capillary circulation, and finally, to reward our efforts, a return of the excretions of urine and bile; when these reappear, all vomiting and purging cease, and our patient is almost cured.

"After recovery, the contrast between the cholera and fever patient is as

[1] "When mustard is used, its conservative effects as a stimulant sometimes counteract its destructive effects as an emetic."

great as it was during sickness. The fever patient has been overworked for nine or fifteen days without a suitable supply of food, and, when convalescent, experiences a complete exhaustion of strength that lasts for many weeks. The cholera patient, on the other hand, has been prevented from working by constriction of the capillary vessels, caused by the absorption of the cholera poison,[1] and feels, on recovery, much like a man that has been half drowned, while the fever patient resembles a man that has been half starved; the one is able to return to his work in the course of a few days, the other, only after the lapse of so many weeks.

"There are two popular superstitions prevalent among medical men respecting nature, which yearly slaughter hecatombs of victims, viz., that nature is simple in her operations and beneficent in her intentions: she is often both simple and beneficent, but at other times she is unquestionably both complex and malevolent."

Before trusting Nature in cholera, and proceeding to help her, Dr. H. thinks it would be well "to inquire whether she intends to cure the patient by her evacuations, or to put him into his coffin. For myself, I greatly mistrust her, and would wish to ask, previous to assisting her, whether she is really my mother or only my stepmother. Our experience in Dublin has shown that no more effectual mode of shortening life could be devised in cholera than the 'eliminant' treatment; and it was accordingly abandoned as soon as tried in that city.

"It is much to be regretted that an authority so deservedly held in high repute as that of Sir Thomas Watson can be now quoted in favour of the treatment of cholera by the maxim *similia similibus curantur*. So far as Dr. Watson has informed us, his change of opinion rests upon the statements of others, and not upon his own experience. He has suddenly become an advocate of the castor-oil, rhubarb, calomel, and eliminant treatment of cholera, and writes as follows:—

"'When I last spoke on this subject in these lectures, I stated that the few recoveries which I had witnessed had all taken place under large and repeated doses of calomel, but I could not venture to affirm that the calomel cured them. At present, I am much disposed to believe that, by its cleansing action, the calomel may have helped the recovery; and after all that I have since seen, heard, read, and thought upon the matter, I must confess that in the event of my having again to deal with the disorder, I should feel bound to adopt, in its generality, the evacuant theory and practice.'

"Sir Thomas Watson omits to add that the cases here referred to were only six in number, of whom three died, and three recovered; which is exactly what might have been expected if he had not interfered at all."

3. *Diabetes mellitus*, according to Dr. H., "furnishes us with one of our best proofs that all the chemical changes, by means of which work is produced, take place in the blood and not in the tissues of the body; and, at the same time, an examination of its phenomena explains satisfactorily the regimen and diet which has been found, by experience, most suitable to the diabetic patient. I shall illustrate the disease by a case which was placed under my control, by Dr. Stokes, some years ago.

"A young man, aged twenty, named Murphy, suffered from fever (enteric?) in November, 1859, and, on recovering, became diabetic; he was admitted into the Meath Hospital in October, 1860, where he remained, under my observation, until his death on January 12, 1861.

"He was allowed for nine weeks to eat as much as he liked of certain kinds of food, which were varied, week by week, to suit his wants, my object being to obtain, if possible, the natural constants of the disease undisturbed by external interference; the only medicine used by Dr. Stokes's order being opium, to produce sleep, and a little creasote occasionally to promote digestion. As the details of this experiment have been fully published, I shall confine myself to the final results. His food and excretions were analyzed from week to week, so

[1] "Whatever this may be, its period of incubation is forty-nine hours; that of strychnia is twenty-two minutes."

as to determine the total quantities of sugar-forming and urea-producing food, as well as the sugar and urea actually excreted.

"During six of the nine weeks the sugar excreted was in excess of the sugar ingested, and the means of the daily excretion and ingestion of sugar were—

Sugar excreted	9773 grs.
Sugar ingested	9321 "
Diff.	452

"During two of the nine weeks of observation the urea excreted was in excess of the urea ingested, and the mean daily excretion and ingestion of urea were—

Urea excreted	1182 grs.
Urea ingested	1349 "

"The foregoing facts illustrate strikingly one of the prominent symptoms of diabetes—viz., the canine appetite—the quantity both of sugar-producing and urea-forming food consumed is more than double what is necessary to maintain a vigorous labourer in perfect health. An examination of the excretions explains the other prominent symptom of diabetes—viz., the complete prostration of strength in the patient, notwithstanding the great amount of food consumed.

"In a state of health, food produces three excretions only—viz., urea, carbonic acid, and water; in diabetes the farinaceous foods appear in the excretions as sugar, and not as carbonic acid and water; and the work necessary to maintain heat must be provided altogether at the expense of flesh food, which is the very form of food least fitted to maintain it.

"The diabetic patient resembles a racing steamboat on the Mississippi whose supply of coal is exhausted, and whose cargo furnishes nothing better than lean pork hams to throw into the furnace to maintain the race. It cannot be wondered at that our poor patient, under such disadvantageous conditions, fails to keep in the front.

"Let us compare together the minimum of work necessary to keep Owen Murphy alive with the work actually supplied to him by the food digested.

"1. I have already stated that Dr. Ranke found 660 grms. of carbonic acid in the extreme fasting condition, when he weighed 67 kilogrammes. Now, since

660 grammes	= 10185.35 grs.
67 kilogrammes	= 147.71 lbs.

we find 69 grs. per lb. of body weight as the minimum excretion of carbonic acid consistent with continued life.

"This quantity of carbonic acid represents a work generated by its production that would lift its corresponding pound of body weight through a height of

$$69\times\frac{6}{22}\times 8080\times\frac{9}{5}\times\frac{772}{7000\times 5280}=5.716 \text{ miles.}$$

"Under ordinary conditions, the greater part of this carbonic acid and work is produced by the digestion of farinaceous food; but since, as we have seen, the farinaceous food is excreted as sugar in the diabetic patient, and therefore does no work at all, the whole of the foregoing work must be done by the digestion of other kinds of food.

"I have already shown that it follows from Lavoisier's experiments (confirmed in a remarkable manner by those of Regnault), that the work done by the combustion of carbon in the body is to the work done by the combustion of hydrogen in the proportion of 9068 to 3024—almost exactly 3 to 1; hence we have the work done by Owen Murphy as a minimum in health.

Due to carbon	5.716 miles.
Due to hydrogen	1.905 "
	7.621 miles.

"This result is somewhat in excess of the truth, for the same reason that the

calculated digestion coefficient of proteine is in excess of that found by Frankland from experiment; for the combustion coefficients of carbon and hydrogen, in organic compounds, are slightly less than when free. If we are permitted to reduce 7.621 miles in the same proportion as in the digestion of proteine—viz., 48 to 43, we shall find—

Owen Murphy—minimum of work consists of body weight lifted through . . . . . 6.83 miles.

"Let us now compare this minimum with the work actually performed by him when suffering from diabetes, by the digestion of flesh food and production of urea.

"2. I have already shown that the work produced by the formation of 501.28 grs. of urea is 704 foot-tons by calculation from the composition of proteine and urea; this result should be reduced in the proportion of 48,375 to 43,155, in order to obtain the work given by Professor Frankland's experiments. Making this reduction, we find that 500 grs. of urea correspond to 626.3 foot-tons of work, or 100 grs. urea to 125.26 foot-tons; or, in other words—

"*Every four grains of urea excreted correspond to five tons lifted through one foot.*

"Owen Murphy excreted, on an average, 1182 grs. of urea daily during nine weeks, which, by the foregoing rule, are equal to

$$1475 \text{ foot-tons} = \text{Murphy} \times x;$$

where x represents in miles the height through which the patient could be lifted by the work done per day: and is equal to

$$x = \frac{1475 \times 2240}{93.66 \times 5280} = 6.69 \text{ miles.}$$

"This result is almost exactly equal to that already found as the minimum consistent with continued life, and explains in the most satisfactory manner the complete prostration of the patient, notwithstanding the consumption and digestion of more than double the usual quantity of flesh food.

"In corroboration of the foregoing conclusion, I may mention that Murphy's temperature was found to be constantly 2° Fahr. below that of other patients (chronic) placed in the same ward, and, in other respects, under similar conditions. His unfavourable symptoms (so long as his powers of digestion were not impaired) were invariably alleviated by the free use of flesh food and fat, the latter being instinctively preferred by him; so much so that during the delirium that preceded his death for twenty-four hours, he raved incessantly about 'fat, roasted fat, which the angels of heaven were preparing for him.'

"I have studied many other cases of diabetes mellitus, and found similar results in all; but I feel it to be unnecessary to describe them, as one well-ascertained train of phenomena, carefully observed and recorded, is quite sufficient to establish the order of nature."

While it may be perhaps, considered that Dr. H. has not fully accounted for all the phenomena of typhus fever, it must be admitted that he has most satisfactorily explained the prominent ones and corrected some prevalent erroneous notions. He has demonstrated that in patients lying in bed with typhus fever there is not, as has been supposed, a cessation of those processes which exhaust the bodily forces, but, on the contrary, that these processes are going on with unwonted activity—that the elevation of bodily temperature involves an expenditure of force greater than that consumed by a labourer in a hard day's work—and that consequently there is a peremptory demand for supplies of combustible food to maintain the oxidation of the tissues and to supply the force which could not otherwise be obtained, except at the dangerous expense of the tissues.

His explanations of the phenomena of cholera Asiatica and diabetes mellitus are of the highest importance, and constitute the most important and beautiful application that has been made of modern physiology to pathology and therapeutics. The correctness of his teachings must be assented to by all who carefully study these subjects.

ART. XXI.—*Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle.* Compilato e Diretto dal Dott. G. B. SORESINA, Ispettore Sanitario di Milano, etc. Colla Co-operazione del Sig. Dottori ALBERTETTI CAV. GIACOMO, AMBROSOLI CARLO, etc. etc. Milano: 1867, Volumi III., IV.; e 1868, Gennaio e Febbraio.

The Italian Journal of Venereal Diseases and of Diseases of the Skin. Compiled and Edited by Dr. G. B. SORESINA, Medical Inspector of Milan, etc. With the Co-operation of Doctors JAMES ALBERTETTI, CHARLES AMBROSOLI, etc. etc. Milan: 1867, Vols. III., IV.; and 1868, January and February.

IT is creditable to the zeal and intelligence of our medical brethren in Italy that they are able to sustain, in addition to professional journals of the usual character, one on special subjects. We may express the opinion that the expectations and promises of Dr. Soresina and of his collaborators, twenty-one in number, have been borne out by the substantial additions to our knowledge of the literature and clinics of Syphilography and Dermatology in the contents of the two volumes for the last year and of the two numbers for the present one. The Journal wears, in addition to its intrinsic merits, a pleasant face in its fine paper, clear type, and numerous engravings in illustration of various matters in the text. It has a large store of clinical materials to draw from in the separate departments of the great hospital of Milan for venereal and cutaneous diseases. The annual report of those of the latter class for 1865, by Dr. Dubini, shows that there were no less than 1483 cases successfully treated in that year in the hospital, and 64 out-patients prescribed for. Of this number, 904 were cases of scabies, 134 of tinea (porrigo), and 355 of non-contagious diseases of the skin. The last mentioned were made up of 181 males and 174 females. In both sexes the prevalent varieties of dermatosis were eczema, impetigo, erythema, prurigo, psoriasis, and *lupus*. The women were most affected with eczema during the period of lactation, and that in every month of the year. Impetiginous and pruriginous cases were most numerous in July.

The January number for 1867 opens with a paper on dermatology, written aphoristically by Prof. Gamberini, in which he gives a succinct yet lucid description of the several diseases of the skin, anatomically and pathologically considered, and brief references to their causes and occasionally to their treatment. After speaking of syphilitic and scrofulous dermatoses, the author pictures the gouty, alkaline, and arsenical varieties. A learned and instructive lecture on *Tinea tonsurans*, by Prof. Michelacci, finds place in the May and July numbers for 1867 and the January one for 1868. It is accompanied by engravings of a subject covered with porrigo, and of the hair of the spores of the vegetable parasite *Tricophyton*, belonging to the cryptogamous class, which fill up the capillary follicles, and are the determining cause of the disease. The treatment, applicable also to sycosis and acne, will consist primarily of depilation and destruction of the parasite by appropriate topical applications. It may be well to remember when depilation is had recourse to, that the pain accompanying this process is entirely prevented by the previous use of the ether spray, as recommended by Dr. Horand. Prof. Scarenzio gives the history of a case of tinea or porrigo favosa diffused over the surface of the body, in a young man aged twenty-six years, whose childhood and youth had been passed in great destitution. Generous diet, bitters, and chalybeates brought up the general system to a healthy standard. Fomentations and cataplasms, shaving the head, bathing, and cleansing washes, followed by a solution of corrosive sublimate to the parts, completed the cure. Another report on the department of the hospital for cutaneous diseases is made by Dr. Schivardi, in which he takes occasion to speak in strong terms of censure of the almost entire want of adequate lodging and means of bathing for the patients in the hospital affected with porrigo and scabies. He treats in detail of the history of this last disease, and of the discovery, structure, and habits of the *Acarus scabiei*. The successive modes of treatment are also detailed; the greatest stress being laid on storax and Helmerich's ointment, which latter the author believes to be the best remedy

of all those hitherto used. He relates the successful results of the practice of different physicians in favour of storax; but he regards this article as more costly than the ointment just named, and its use is attended with the serious drawback of staining the linen and other material worn next the skin. The ointment of Helmerich, as originally prescribed by him, consists of flowers of sulphur three parts, subcarbonate of potash one part and a half, and fat and oil enough to make a soft ointment. In the Milan hospital, brown soap, in the proportion of eight parts, is added, with the effect of a great increase of antipsoric virtue. A warm bath of an hour's duration, and a good lathering and washing with brown soap, should precede the use of the ointment, which is then well rubbed on the affected skin by the patient, assisted by a ward attendant. The patient then resumes his shirt, and his hands and arms are covered with cotton or linen pieces, and he is put to bed until the next day, when he takes a cleansing bath with soap, so as to remove all the ointment from his skin. Dr. Schivardi restricts the time required for this mode of treatment of the itch into a still shorter period, saying, a few lines further on, "By this method, a patient coming in early in the morning goes out cured in the evening." Under previous modes of treatment the stay in the hospital was nineteen days. The clothes used by the patients with itch are put into a box and exposed to a temperature of 122° Fahr., which destroys the acarus and its eggs. In some hospitals the clothes are subjected to sulphur fumigations. Dr. Schivardi denounces in strong language the barbarous practice of subjecting those afflicted with *tinea tonsurans*, or "scalled head," to the pitch cap.

Prof. Lombroso, in a letter to Dr. Griesinger, contained in the January and February numbers of the Journal for the present year, furnishing an interesting statement of the etiology, symptoms, anatomical lesions, and treatment of *Mania Pellagrina*, and incidentally notices the causes and comparative statistics of pellagra itself. "That the pellagrous are all of them inhabitants of the country or poor is," Dr. Lombroso assures us, "certain; that pellagra is diffused in the direct proportion to the cultivation of maize (Indian-corn), is equally certain. Thus Cremona and Brescia contain one pellagrous subject in every 21 or 22 of the inhabitants, Pavia only one in 488, and Sondrio one in 4166; the fact being that in the two first-mentioned districts the food consists exclusively of maize, and in the other two places, in addition, rice in the first and rye in the second. So also Rovgo, in the decennial period 1847–56, could furnish only 12 subjects of pellagrine mania, and Belluno 22, because in the first rice and in the second rye and chestnuts were abundant, while Verona and Treviso, yielding largely maize, gave 109 and 209 pellagrine maniacs; and pellagra is now for the first time making headway in Comarca and Val d'Arno, following the cultivation and use of maize. The disease does not appear in Naples and Sicily, owing to the use, conjointly with maize, of vetches, beans, figs, and golden apples." The author refers in a note to the statistics of Bellardini, from which it appears that of 37,268 pellagrous persons but 4032 were workmen, and all of the remainder were country people; the proportion of the sexes was 21,140 males, and 16,488 females. Chemistry fails to furnish us with any explanation, since maize is richer in the phosphates and azotates than rice, which, looking to China and India, cannot be accused of causing pellagra in the immense populations of those two countries, whose chief and almost sole food consists of this grain. Dr. Lombroso hints at the probability of an explanation being found in the *sporisorium* or spore product of maize.

The author tells us that in every hundred of the pellagrous there are 10 of this number insane. Of 50 persons labouring under pellagra, 27 had the disease by hereditary predisposition; in the 23 others there was no sign of serious organic or cerebral lesion. Of the first class there were 6 whose parents suffered from pellagra, 7 whose brothers were thus affected, while the aunts of 2 and the grandfather of 1 were in the same category. Two had fathers, one a brother, and two had uncles who had all been victims of alcoholism. Insanity had shown itself in the parents of four, in the brothers of three, and in the uncles of two of the twenty-seven sufferers from hereditary pellagra. Of the entire number only ten were cured; and of the twenty-three who were exempt from hereditary taint, there were ten cures. Five cases of mania pellagrina were referable to a

predisposition induced by insufficient food, and to the exciting causes of a moral nature—fear and matrimonial disappointment. In two instances the exciting cause was lactation in one and the puerperal state in the other. The food of all of them had been almost entirely maize, with a little rice and milk.

Dr. Lombroso presents, as the results of his observations for a period of five years, a statement of the peculiarities in structure and functions of the subjects of pellagrous mania, which come under the heads of weight of the body, erythema, configuration of the cranium, digestion, urine, motility and sensibility, and the psychical faculties. The *weight* of the body in the pellagrous maniacs is of the lowest degree met with in chronic diseases, and especially in insanity. On an average, it is less by 25 pounds than the physiological rate. The absence of erythema in so many of the patients received into the hospital may be explained by the circumstance of the long interval of exemption from rural labour, and consequent protection from the sun, exposure to which, if not the direct, is the adjuvant cause of the erythema. Inquiries would show the previous existence in these persons of the cutaneous eruption. Dr. Lombroso directs attention to an affection of the skin which seems to him to be quite common, as it occurred in 30 of the 50 cases whose history he records. It is telangiectasia, or a subcutaneous extravasation of blood spread over the breast and abdomen like petechiæ. The *cranium* has no special conformation belonging to this variety of insanity. The anomaly of the growth of the beard in women and its absence in men, so common in the insane generally, is seldom seen in the pellagrous, except the disease be hereditary. The same may be said of malformation of the ears and teeth. The *digestive functions*, which in the first period of pellagra are so much deranged, are quite normal in pellagrous mania. The subjects of this latter no longer complain of that burning heat in the epigastrium and the continuous eructations which are so tormenting before the outbreak of mania. It must be said, however, that nearly all of them exhibit a tongue with longitudinal and sometimes transversal cracks and fissures, and with a dry and red surface from abrasion of the epithelium, as is seen in those affected with catarrh. With some of the pellagrous, in all seasons, diarrhœa is one of the most constant accompaniments, and at the same time unmanageable, and in many cases it proves to be the direct cause of death. The *urine* offers some noticeable particulars in pellagrous mania, but more of a negative than a positive nature. Thus, while other classes of the insane discharge a urine of a very deep colour, loaded with an abundance of phosphates, and of greatly increased specific gravity, on the approach and at the time of the paroxysm, the urine of the pellagrous insane is of less specific gravity, and undergoes little change in either the period of excitement or that of calm.

Of the functions of animal life, motility is that which undergoes the greatest changes. More than erythema itself, as diagnostic of this disease, is a singular rigidity, especially of the extensor muscles, and hence the preference of the patients for movements of flexion and contraction. Some of them will rest firmly on their feet, but they take neither an erect nor a sitting posture; or others will hold the arm out, semiflexed and rigid. On occasions this tendency is carried so far as to produce varices, &c. *Sensibility* is generally less in pellagrous insanity than in ordinary health, as tested by the induced electrical current, according to a method proposed by the author. An exception to this difference is found in the frontal region, which is as sensitive, if not more so, in the disease under notice than in health. The insensibility in other respects shows itself in the disregard of cold, or of great heat even to the extent of its causing burns and scalds. Dr. Lombroso has not seen any form of insanity peculiar to pellagra, or which would seem to distinguish it from other forms of mental derangement.

The ordinary complications of mania pellagrina are the well-known pellagrous ulcers of the intestine, gangrenous bedsores, paralysis of the bladder and of the inferior limbs, œdema either partial or general, scurvy, and persistent anæmia. Dr. Lombroso remarks on the singularity of the absence of diffused tubercle in pellagra, although this disease prevails in the province which furnishes the materials for his observations, and it is known to be common among the insane generally. In its stead come cases of cardiac complication—1st, of carditis; 2dly, of hypertrophy of the heart; and 3dly, of atheroma. The terminations

of pellagrous mania are exhibited by the author in histories of different cases. First is that of *suicide*, committed in two instances by the patients, both of them females, the one 58, the other 47 years of age. Dr. L. gives as the immediate cause of death in the cases he relates, paralysis, ulcerated colitis, myocarditis, &c.

Doctor L., differing from most of those who have written on the subject, has frequently met with lesions of the heart, which he regards as primary affections in pellagrous maniacs, whereas those of the lungs, and chiefly pneumonia, are secondary. Sometimes tuberculosis is arrested and takes a retrograde course. The most frequent anatomical change perceived after autopsy was ulceration of the mucous membrane of the colon.

The cure of pellagrous mania is, in the author's experience, a comparatively easy matter. In fifty cases of the disease, he could count twenty cures, and of these there were but two relapses; six were cured spontaneously, and, as it would seem, by good food. He points out a peculiar form of pellagrous mania, which he believes to have escaped the notice of previous writers. It consists in an arrest of growth of the body, and above all, of the organs of generation, with, at the same time, precocity and permanent activity of the intellectual faculties. Six cases of this nature came under his care, and of these five were cured and one was in a course of recovery. Of the four cases the histories of which are given, two were females and two males.

The *Medical Journal of Rome* is quoted in the August number of the *Italian Journal* for some practical observations by Dr. Tassi on the use of arsenic in certain surgical diseases. Two cases of *lupus erodens* are described, in which the application of an arsenical powder called after *Frate Cosimo* was attended with complete success, and the cicatrices were observed to be more equal and uniform than usual. We are told by the same author that the efficiency of arsenic in destroying syphilitic, scrofulous, and herpetic virus is unequalled. Scrofulous ulcers which had been rebellious to the topical application of iodine, mercury, and various tonic remedies, yielded wonderfully to a weak solution of arsenic in rose or mint water. In cases of obstinate phagedenic ulcers of a venereal character which had resisted the use of mercurial preparations, Tassi added to a solution of sublimate a grain or so of arsenic with the best effects. The free use topically of arsenic in ulcers of the lower extremities with callous border, occurring to the inhabitants of paludal regions, or from specific causes, was quite successful, conjoined with methodical compression, which of itself had produced no effect. The author adds that modern therapeutics admit the almost specific effect of arsenic in parasitical diseases. In syphilitic cachexia he has used Donovan's solution as modified by Ferrara, with the best results.

Doctor D'Ormea, assistant clinical physician for the treatment of venereal cutaneous diseases in the University of Bologna, speaks of the healing virtues of Fowler's solution in epithelioma; and confirms the observations of Professors Gamberini and Rizzoli to the same purport. He gives the histories of six cases of females—all of them prostitutes—who had fungous growths at the orifice of the urethra or at the borders of the internal labiæ, and who had been treated by mercurials and cauterization, and other remedies without effect, but who were cured by the external application of Fowler's solution. In three other cases, one of a man, and two of females, still under his care when he wrote, there was evident amelioration of the disease. In the man the epithelioma with ulceration was seated on the soft palate.

The solution of perchloride of iron is strongly recommended in anthrax by Dr. Giuseppe, who is attached to the Great Hospital in Milan. The author points out the various diseases and local structural changes in which this remedy has been applied with more or less success, since its first introduction into practice in 1853. Among these we find leucorrhœa with relaxed state of the *os uteri*, and especially vegetations and granulations in the vagina, chronic or passive menorrhagia, and in the latter days of excessive and unduly prolonged menstruation. In cases of this nature, the following injection was used: decoction of marsh mallow two-thirds, with which is to be mixed four or five drachms of perchloride of iron of the density of forty-five degrees of Beaumé's aerometer, to be repeated two or three times daily. This formula was also employed in case of superficial erosions and fissures of the *os uteri*, and as an auxiliary remedy in descent

and slight obliquity of this organ. As an hæmostatic for external hemorrhages Viente used the following formula: distilled water, three and a half ounces; sesquichloride of iron, from forty-five to seventy-five grains. Lint or muslin compress moistened with this liquid is to be applied to the bleeding part and retained on it firmly by a roller, or by pressure in other ways. For an internal hemostatic he employed another formula, viz., distilled water, eight ounces; sesquichloride of iron, twelve grains; sugar, q. s. Of this solution the patient will take a spoonful (tea or table not stated) every hour, or half hour, or even every fifteen minutes, according to the extent and persistence of the hemorrhage. A solution of the perchloride of iron has also been applied with success in chronic ophthalmia and vascular growths in which the customary astringents, cauterizations, and even excisions, had been tried without effect. Follin used it also with benefit in subacute conjunctivitis with ulcer of the cornea. The usual form of application was to put a drop of a solution of 15° to 20° density of Baumé, with a pencil or glass rod, every second day. Great pain is felt by the patient for the next fifteen minutes, and after it intense heat, which lasts for many hours. The remedy was also given internally by Devergie in cutaneous affections and in scurvy. Military surgeons have had occasion to test the efficacy of the sesquichloride in hospital gangrene, and in many instances have recorded their satisfaction with the results of its use in such cases.

Dr. Giuseppe gives accounts of five cases of anthrax in which he employed sesquichloride of iron topically to the diseased structure, and in all of them with entire success. The names of four other persons similarly affected are given by the author, and the reports of their cases are equally satisfactory. The period of treatment varied from sixteen days to a month. In the five cases of which we find a special record, deep crucial incisions were made before applying the sesquichloride of iron, which Dr. Giuseppe believes to be the best substitute for the actual cautery. Numerous cases of varices have been entirely cured by the remedy, in the experience of Vallette, Petrequin, and Desgranges.

Animal vaccination, or the introduction into the human subject of vaccine matter from the cow, is practised on a large scale in Venice and Naples, and arrangements are being made for carrying out similar measures in Florence.

In Venice, animal vaccination has been practised for the last thirteen years, under a commission, consisting of the municipal physician, two other medical men, a surgeon, and the municipal veterinarian of Venice, under the presidency of the physician of the province. Such is the confidence now placed in its utility and success, that applications for vaccine matter are made, not only from all parts of the Venetian territory, but also from Istria, Dalmatia, and even Egypt. The benefits of vaccination, with regenerated matter, are extended, with the happiest results to classes of persons who would otherwise be neglected. Experience has shown that even where the vaccination of a child had only been productive of a small pustule, the matter thence procured and inserted into other children has produced full pustulation.

In Florence, Dr. Galligo procured from Dr. Negri, of Naples, genuine matter from the cow, which he inserted sixteen times, with resulting regular and characteristic vaccine pustules, without any symptom of unusual local irritation.

We have noticed the wise measures of preventive hygiene, in regard to vaccination, adopted by the municipial governments of some of the great Italian cities, both as important and instructive in themselves, and as suggestive of analogous measures in the different cities and towns of the United States.

An account is given in the Journal of the Royal Academy of Medicine of Turin, of the spontaneous appearance of cowpox in cows, on the royal grounds at Vernecia, Piedmont. Professor Bassi collected in tubes, from the pustules thus produced, vaccine matter, which he inserted into several children with entire resulting success.

Professor Pellizari details cases of impetigo, twenty-eight in number, following vaccination, in the district of Faenza. We deem it needless to do more here than to give his conclusions, which are to the effect that, as the eruption did not show itself in the soles of the feet or palms of the hands, the eyelids or hair, nor in the mucous membrane of the mouth, nor in the genital organs, nor anus, it was wanting in the characteristic features of syphilis; the ulcers, when they

existed, had not the usual indurated border. They could not, if they were syphiloid, have been cured as were those seen on the children, whose cases are described. They were entirely cured in thirty days. There was, moreover, no swelling of the gland in the neighbourhood of the cutaneous sores; no erythematic spots, nor papulæ, nor crusts on the hairy scalp. None of the women who nursed the children showed any symptoms of syphilis; and in addition, it should be mentioned that an analogous cutaneous affection was observed in others who had not been vaccinated ih the same year. The author believes that the impetigo, in the subjects that were brought to his notice, was spontaneous in its origin, and should be classed with other cutaneous disorders following vaccination. The curative measures recommended by Dr. Pellizari were chiefly of a hygienic character: he advised, however, the revaccination of those children, who, besides having impetiginous, presented vaccinal crusts and cicatrices of an imperfect character.

Dr. Giuseppe tells (in the July number of the *Journal*) of retarded development of vaccine pustule in three cases. The first was one of seven children, vaccinated at the same time, with the same matter, six of whom had vaccinia perfectly in the usual period of eight days; but in this one nothing could be seen at the expiration of this time but the remains of the mark made by the puncture for the insertion of the vaccine matter; and it was not until the twentieth day that, after febrile excitement, there appeared six vesicles which went through their course regularly. On another occasion Dr. Giuseppe vaccinated ninety persons, two of whom, a child and a youth of eighteen years, seemed not to have taken the vaccine, as there was not, on the eighth day, the slightest trace of a puncture on the arm; but on the thirteenth day from the operation the vesicles began to show themselves, and pustulation was completed on the eighth day of their appearance. Dr. Messana relates a case of vaccination of a child ten years old, in which there was every appearance of entire success up to the seventh day, after which a real umbilicated vesicle disappeared for twelve days. There was then a return of vesicle and areola, followed by suppuration and desquamation in the usual order.

In a series of letters addressed to the editor of the *Italian Journal*, from March to June, 1867, inclusive, Professor Gamberini investigates the question of the transmissibility of syphilis by vaccination. We cannot, for want of room, follow the author in his course of argument on the occasion, but shall give some of the conclusions which he has reached. Numerous facts show that vaccine matter taken from syphilitic subjects produces only true vaccinia in healthy persons. We cannot admit the existence of a syphilitico-vaccine pustule, or one containing both kinds of virus. Such a pustule ought to have its appropriate physiognomy; but none such has been witnessed. In many cases of disease following vaccination, it is an error in diagnosis to regard them as syphilitic; and it may be said that in all the alleged cases of the transmission of syphilis by vaccination, there are too many breaks and inaccuracies in the argument to allow of a correct judgment being formed. One great cause of fallacy on these occasions is the coincidence of the evolution of latent syphilis with vaccination, and receiving the latter as the cause of the former. Syphilitic patients taken with smallpox, measles, &c., do not communicate syphilis to healthy persons near them, and why should vaccination act in a different manner? When artificial inoculation is performed with mixed vaccino-syphilitic matter, the sole result is a pustule of venereal character. There may exist vaccinal and syphilitic pustules on the same subject, and hence a vaccinator may incur the risk of imparting to one healthy person vaccinia and to another syphilis.

A case of supposed curative power of smallpox in alarming diphtheria is related by Dr. Lombroso in the July number of the *Journal*, 1867. He gives also the history of the case of a peasant girl, twenty-two years of age, maniacal from an early age, and at the time of writing in a state of dementia, who was restored to sanity by becoming the subject of natural smallpox.

Syphilography takes up, as might be expected, considerable space in the *Italian Journal*. One of the longest articles, extending to three numbers of the *Journal*, is by Dr, Padova, of Pavia, on the question, whether a mother

labouring under syphilis can transmit this disease to her child through the medium of her breast milk? The writer takes an historical review of the opposing opinions of syphilographers, from the beginning of the sixteenth century down to the present day; and he gives a series of cases and a number of experiments by many of them in illustration or enforcement of the arguments on both sides. He reaches definitively and decidedly the conclusion, important both in a pathological and medico-legal point of view, that the milk of a mother infected with syphilis is not a vehicle for the transmission of the contagion to her child. If a syphilitic child is presented to a physician, he will be free to deny that it has become so by the milk sucked from its mother or wet-nurse, and it will be his business to show that the child had the disease from birth, or had contracted it by chance contact with the syphilitic poison.

Dr. Lombroso gives the melancholy history of the case of a man, aged thirty-three years, who, after long syphilitic poisoning, became affected with mania, general osteo-porosity, adipose degeneration and abscess of the muscles, cystitis, vegetations of the aorta, and spinal meningitis. Some of these organic lesions were evinced by symptoms during life—others were revealed by a *post-mortem* examination.

In a letter to the editor, Dr. Nicola, of Civita Vecchia, furnishes an account of his treatment of a case of syphilitic pemphigus associated with chronic gonorrhœa and soft ulcers of the glans and the prepuce, swelling of the glands and iritis, in a man forty-one years of age. He designates his curative means as *Phenico-Sulphitic*, used in the following manner: We should premise that the skin of the patient was, with the exception of the face and hands and the left leg, nearly covered with bullæ and dried scabs, which, when detached, left an ulcerated surface exposed. The intermediate space was occupied with a reddish coppery eruption. Having first given a purgative, Dr. Nicola directed a careful bathing of the crusts and ulcers every six hours with a solution consisting of 80 parts of orange-flower water and 20 of liquid phenic acid; the parts were then covered with fine linen rags wet with the following liquid: ℞.—Glycerine and liquid phenic acid, of each 2 oz.; balsam of Tolu, half a drachm; laudanum, 20 drops. In the morning and evening an ointment, consisting of sulphite of soda and lard, washed, of each 1½ oz., was to be rubbed into the inguinal and axillary regions. This constituted the topical treatment. The internal remedies were, an ounce of the rob of Affecteur, four ounces of the decoction of pollini, every morning; and a powder consisting of 45 grains of sulphite of magnesia, 12 grains of bicarbonate of soda, and 8 grains of sugar, to be taken an hour before dinner. By the twenty-eigth day of the above treatment the ulcers had become entirely cicatrized, the swelling of the glands dispersed, and the only traces of the bullæ were red spots. The cure was retarded by the inability of the stomach to retain always the substances prescribed. Attention was now directed to the gonorrhœa, which, with the exception of some periods of suspension, had lasted for several years. An injection, three times a day, of the following mixture was prescribed: ℞.—Distilled orange-flower water, 4 oz.; liquid phenic acid, 1 oz.; distilled peppermint water, 1½ oz.; laudanum, 1 drachm. The use of this injection for five days sufficed to cure the gonorrhœa; but at the expiration of this period there supervened intense headache, especially in the frontal and supra-orbital regions, tension of the eyeballs, greatest at night and more particularly between 9 P. M. and 3 A. M., wakefulness and fever, which lasted three days. At this time the left eye became red, tearful, and intolerant of light, and in the course of twenty-four hours violent iritis showed itself. Recourse was had to active purging, bloodletting from the arm to the extent of 10 oz., and restriction to a rigorous diet; and the following collyrium was applied to the eye: ℞.—Sulphite of soda, 1 drachm; distilled lettuce water, 4½ oz.; extract of belladonna, 6 grains. The use of the sulphite of magnesia and of the rob was continued. On the eighth day from the attack of cephalalgia, fever and iritis, and the redness of the eye had disappeared; the pupil was restored to its natural condition, and the sight was entirely recovered. Discontinued the rob, and in its stead Dr. Nicola directed the patient to take of syrup of gentian and dulcamara 20 oz., iodide of potassium 6½ drachms, in the dose of a tablespoonful every morning. This syrup, together with the sulphite, was continued for

rather more than three weeks, at the end of which the patient left the hospital entirely restored to health.

A case of venereal exostosis of the sternum and the left tibia in a man thirty-three years of age, is related by Dr. Carmelo, in the Journal, as having proved intractable to the iodide of potassium in doses increased to forty-five grains daily, and yielding to the deuto-phosphate of mercury, in doses of one grain in the day, continued for two months.

Dr. Fidele di Fieri, who wrote an essay on this mercurial salt, gives it the preference over all the other preparations of mercury, and extols its remedial powers in gout, phthisis, convulsions, sciatica, glandular engorgements, asthma accompanied by serous extravasation in the pleura and pericardium, nephritic pains, and mucous deposits in the urine, gastralgia, osteocope, eruptions with scabs; all of these disorders having in certain persons a syphilitic origin.

Dr. Minteforte, in a report on the clinical practice in the syphilitic hospital at Palermo, claims that great benefit was derived from phenic acid, five parts to water one hundred, in syphilitic ulcers, applied by means of lint. In syphilides, generally, the iodide of arsenic was the preferred remedy; and he states that subcutaneous injections constitute the best means of cure in some cases.

There is a long paper, retrospective and clinical, on blennorrhagic ophthalmia, by Dr. Rosmini, in the November and December numbers of the Journal. His practice in this disease is to cauterize freely the palpebral conjunctiva, both of the upper and lower lid, from one commissure to the other, while taking care to raise as much as possible the lid from the ball of the eye. The process is to be repeated in the less violent cases twice a day; and only when the purulent discharge continues for some days, are injections of a solution of crystallized nitrate of silver—two grains to an ounce of water—to be used at the same time. This may be increased to three or four grains to the ounce if the pyorrhœa returns after cauterization by the solid nitrate.

Professor Profeta, lecturer on syphilography and dermatology in the University of Palermo, makes extended observations, critical and historical, on "the alleged gonorrhœal articular rheumatism," in the July and August numbers of the Journal. He shows that the only relation of rheumatism to gonorrhœa is that of simple coincidence in the time of their attack. There is nothing distinctive in the complications of the alleged compound disease from what is seen in those of acute articular rheumatism, whether we have reference to inflammation of the lungs and pleura, or affections of the heart. He extends this assertion to the occurrence of serous iritis or inflammation of the membrane of Demours, which, he says, is not entitled to be called metastatic or sympathetic ophthalmia, "a name only fitted to create confusion in the science." The only concession that can be made in favour of the gonorrhœal etiology of articular rheumatism is thus stated by Foucart, viz., that gonorrhœa may constitute a kind of predisposition by which those labouring under it are more susceptible to the actions of external agents and especially the impression from cold, and thus become victims to arthritis, or acute articular rheumatism. Dr. Profeta, making use of numerical proofs of the correctness of his views, tells us, that in more than a thousand cases of gonorrhœa which have come under his notice, and of which four-fifths were men, he has seen only twenty-two of articular rheumatism to which some might give the name of gonorrhœal; but in all of this list there had existed either a predisposition to rheumatism or powerful rheumatismal causes had been in operation. Meignen is quoted as furnishing a statistical return, from the Antiquaille Hospital at Lyons, of 2423 cases of urethral gonorrhœa in men, and in these there were but 68 cases of articular rheumatism.

Doctor Danieli, in the *Journal of Medical and Veterinary Pharmacy*, gives the details and results of his treatment of venereal buboes by injections of sulphate of copper. When the bubo has suppurated or has evidently reached its greatest extent he makes a small opening at its summit with a lancet and empties completely the tumour, and then injects once or twice a solution of sulphate of copper in the proportion of one of this latter to one hundred of water, or say eight grains to the ounce, so that the liquid will come in contact with the entire surface of the abscess. This is to be completely emptied of the injection,

and on the part is applied a thick pledget of lint wet with lead water, and over this again a graduated compress secured by proper bandaging. The patient will be enjoined to keep at rest. This treatment is to be repeated daily, until the fourth or fifth day, when the injections will be discontinued; but the saturnine lotions and compression still applied. The suppurations now become small and serous and of a citron colour, and between the eighth and tenth day it ceases entirely, and the small wound made with the lancet is healed and the patient is well.

The Journal touches on some other subjects than the specialties which constitute its main theme. Thus, for instance, we find a case of stricture of the urethra removed by the urethro-tenotome of Doctor Riccordi, and a plate exhibiting the several parts of the instrument and the manner of using it.

Doctor Ambrosoli communicates, in the February number of 1868, an account of double vagina and double uterus with a double cervix in a prostitute aged twenty-six years, of robust frame, and who had never suffered from any disease, except the gonorrhœa, for which she was admitted into the venereal hospital. On separating the lesser labia two vaginal orifices are seen; the one on the right side being smaller than that on the left. The septum between the two cavities consists of a duplicature of the mucous membrane of the vagina, which in its ascent became gradually thinner, and at its attachment to the cervix of the uterus resembled a most delicate membrane. Dr. A., on careful inspection, discovered another still smaller and more raised cervix and os in connection with the right vaginal cavity. The menses flowed from each of the two passages. Only one of them, the left, was affected with gonorrhœa; the right remaining free from disease. This woman never had children. The author precedes his account of this case with a bibliographical notice of the writers on anomalies of the uterus and vagina. In the September number of the Journal, 1867, we see an account by Dr. Rabe, of Dresden (*Monatsschrift Gebartsk.*) of a case of double vagina and probably of double uterus—in a peasant girl twenty-eight years old.

Here we close our bibliographical notice, without criticism or comment, of the Italian Journal of Venereal Diseases and of Diseases of the Skin, so far as relates to the original department, but without our taking into account its appropriately selected matters. Our readers, looking to the freshness and instructive nature of the subjects now brought to their notice, will, we believe, join us in the wish to be kept in frequent communication with the intelligent and zealous writers and clinical teachers who now contribute to the pages of our valued and esteemed contemporary of Milan. J. B.

ART. XXII.—*Lessons in Physical Diagnosis.* By ALFRED L. LOOMIS, M. D., Prof. of Institutes and Prac. of Med. in Med. Department of Univ. of New York, etc. 8vo. pp. 159. New York: Robert M. DeWitt, 1868.

IN his preface to the book, Dr. Loomis informs us that this volume is published in compliance with numerous requests made by members of his class in Physical Diagnosis. "Had I," he says, "attempted originality on such a subject, I should have committed error. My sole object has been to collect into a plain and comprehensive compend the result of the research of many inquirers." This is rather a modest introduction, but one not without its attraction for the student; for, after all, the most successful teachers are not always the most original men, and in many of the recent works on this subject a good deal of confusion in the minds of students is caused by the attempt to overthrow existing theories. Our author is certainly not over solicitous to obtrude any peculiar views upon the profession, while it is equally evident that he is quite familiar with those professed by the best and most recent writers.

The arrangement of the contents of the book is as follows: 1st. The signs which diseases of the lungs and pleuræ furnish are enumerated, and, to some

extent, their mechanism explained. Then the special diseases of these organs, and the signs by which they are made known to us are considered. 2d. The same method is observed in treating of diseases of the heart; and 3d and finally, the diseases of the abdominal organs are taken up. This arrangement presents some advantages to the student, as by it he can very readily compare the signs of one disease with those of another. Generally, in books of this kind, the physical methods of diagnosis as applied to diseases of the liver, spleen, kidneys, and stomach, are somewhat neglected; but we are glad to see that our author has accorded to them their full share of attention. Very useful also will be found the diagram showing over what portions of the præcordium we are to listen for murmurs caused by diseases of the different valves; and a similar remark will apply to the one copied from Gairdner, to show the "physiological action of the heart in connection with its external manifestations," and to those exhibiting the relative lengths of the two silences in different degrees of frequency of the heart's action.

The book, however, in its present condition is incomplete, and will not, we fear, be found entirely satisfactory to those who desire to know something more about a sound than that it occurs in such and such diseases. As an example of what we mean, and for the purpose of giving our readers a specimen of the author's style, we quote the following, which is positively all that is said about metallic tinkling:—

"Another of the adventitious sounds is that which is termed metallic tinkling, its name being sufficiently descriptive of its character. It sounds like the dropping of a pin or a small shot into a metallic vessel. A single one or a series of tinkling sounds may be produced by the act of speaking, or by the movements of inspiration and expiration, but it is especially consequent upon the act of coughing."

"The sound announces the existence either of a very large pulmonary cavity or of pneumo-hydrothorax. Dr. Walshe regards it as the echo of a bubble bursting in a liquid shut up in a spacious cavity which also contains air."

No mention is made of the sound known as amphoric echo, which is frequently heard in precisely the same conditions as give rise to metallic tinkling, and by many auscultators is looked upon as a modification of the latter sound. A little further on in the book, under the head of "Pneumo-hydrothorax," there is a diagram apparently copied from, but not credited to, Dr. Da Costa's book on Medical Diagnosis, in which drops of liquid are represented falling from the lung into the effusion below; and this is the only reference to this or to any other of the numerous causes which have been assigned to the adventitious sound by different investigators.

The classification of the adventitious sounds is simple, the author rejecting all unnecessary refinement. He follows Fuller, however, in the substitution of the term "mucous click" for "crackling," an alteration which we can scarcely regard as an improvement, as the word "crackling" gives quite as good an idea of the character of the sound as "mucous click;" and even if it did not, we doubt the propriety of attempting to change a term so generally accepted.

The book bears evidence of hasty preparation, for inaccuracies have crept in which a more careful revision would have excluded. Thus, in enumerating the different regions into which the surface of the chest is divided, our author speaks of the inferior scapular region. Almost in the next page, when he gives the boundaries of these regions, it is called the infrascapular. Now, we do not suppose that Dr. Loomis himself would contend that these terms, in this connection, are identical. Also in giving us the signs of pleurisy, the fact that the roughened surfaces of the pleuræ occasionally give rise to a friction fremitus appears to have been overlooked; so, too, that occasionally in peritonitis friction may be both felt and heard.

In describing the boundaries and contents of the different regions, the language used bears such a remarkable similarity to that found in a corresponding part of Dr. Fuller's work on diseases of the chest, that it is impossible to believe that the resemblance is accidental; in some cases whole sentences being transcribed.

We have spoken somewhat freely of the defects of the book, but we think if,

in future editions, more care is bestowed upon the explanation of the different signs, it will prove a valuable addition to the library of the student. As it is now, it can be regarded as little more than a synopsis of a course of lectures.

The printer and publisher have both done their part in a commendable way; there are very few and unimportant typographical errors, and the diagrams with which the book is illustrated are creditably executed. J. H. H.

ART. XXIII.—*Diseases Peculiar to Women, including Displacements of the Uterus.* By HUGH L. HODGE, M. D., etc. etc. "Nullius addictus jurare in verba magistri." With Illustrations. Second Edition, revised and enlarged. 8vo., pp. 531. Philadelphia: Henry C. Lea. 1868.

UPON the appearance of the first edition of this treatise, we expressed our high estimate of it as an original and practical monograph of the interesting class of diseases of which it treats. In the edition before us, the entire work has undergone a careful revision. Many additions have been made to the original text, the result of further observation and reflection and of the study of the many excellent works which have recently been issued by authors whose opinions and practice are deservedly held in high estimation. The chapter on uterine inflammation has been greatly altered and enlarged. "The object of the author," as he informs us, "was not merely to present what he deemed a more correct theory and practice in inflammatory diseases of the uterus, but also to insist that a very large proportion of the so-called cases of metritis are in reality but examples of irritation, where inflammation has subsided or where it has actually never existed." Indeed, the chief aim of the entire treatise is evidently to exemplify the nature, consequences, and treatment of nervous irritation, as distinct from inflammation.

To the subject of displacements of the uterus especially attention has been given. The author estimating these displacements as of the highest importance, while he believes them to be seldom treated on scientific principles.

The third part of the work is devoted to a consideration of sedation—a condition of the tissues in direct contrast with that of nervous excitement or irritation.

Prefixed to the present edition is a chapter in which Dr. H. has presented a general view of the opinions of many high authorities on the subjects respectively of irritation, congestion, and inflammation, with their sequelæ and treatment, in contrast to those advocated in the work before us; with the view that the difference and practice may be more distinctly observed, and, as the author hopes, some valuable truths elicited.

While, with great deference, we should feel inclined to differ from Dr. H., as to the accuracy of one or more of his deductions, we nevertheless receive the work before us as one embracing the teachings of a faithful, accurate, and cautious observer. D. F. C.

ART. XXIV.—*Materia Medica for the Use of Students.* By JOHN B. BIDDLE, M. D., Prof. of Mat. Med. and Gen. Therap. in Jefferson Medical College, Member of the American Philos. Soc., etc. etc. Third edition, enlarged. With illustrations. 8vo. pp. 384. Philadelphia: Lindsay & Blakiston, 1868.

IN the preface the author informs his readers that this, the third edition, has been carefully revised and considerably enlarged. "Besides several substances of established reputation, which appeared to the author to have been overlooked in previous editions, the following of more recent introduction into the materia medica are discussed in the present edition, viz: Calabar Bean,

Woorara, Coca, Guanara, Mate, Rhigolene, Bichloride of Methylene, Compounds of Amyl, Tetrachloride of Carbon, Nitrous Oxide, the Sulphites and Hyposulphites, Carbolic Acid, Antimoniated Hydrogen, Iodide of Ammonium, Iodide of Sodium, and Iodoform. The late valuable addenda to therapeutics —the *hypodermic method* of introducing medicines into the system, and the *atomization* or *pulverization* of fluids—are also treated of at length."

These matters are treated in a very general way, yet sufficiently, perhaps, to satisfy students who regard this volume as a full syllabus and hear the lectures of the author. The work seems not designed to be a full exposition of the materia medica, but simply to embrace outline descriptions of the articles and subjects named, which the student may complete in the lecture-room, or by reference to more elaborate treatises on this difficult subject. The following extracts, taken without selection, illustrate generally the author's method of treating each article. "Absinthium—Wormwood. The tops and leaves of Artemisia Absinthium, or Wormwood (*Nat. Ord.* Asteraceæ), a European plant, naturalized in New England, are ranked among the aromatic bitters, but are not now much employed. They may be given in *infusion* (a troyounce to boiling water Oj)."

"MATÉ.—Under this name, the dried leaves of the Ilex Paraguaiensis, a small tree or shrub of Paraguay, cultivated also in other parts of South America, are extensively used as a beverage throughout the Atlantic region of that continent. *Paraguay tea*, as it is termed, has a balsamic odour and bitter taste, and contains a principle identified with *caffeina* and *theina*, and also tannic acid." W. S. W. R.

ART. XXV.—*A Theoretical and Practical Treatise on Midwifery, including the Diseases of Pregnancy and Parturition.* By P. CAZEAUX, Adjunct Professor in the Faculty of Medicine of Paris, etc. etc. Revised and Annotated by S. TARNIER, Adjunct Prof. in the Faculty of Medicine of Paris, etc. etc. Fifth American from the Seventh French Edition. By WM. R. BULLOCK, M.D. With one hundred and seventy-five Illustrations. 8vo. pp. 1124. Philadelphia: Lindsay and Blakiston, 1868.

JUST before a call was made for a seventh edition of his able work on the Theory and Practice of Midwifery, M. Cazeaux was consigned to the tomb, and the preparation of the seventh edition, of which the one before us is a translation, was intrusted to Professor S. Tarnier, with entire liberty to remodel the treatise according to his judgment, making whatever alterations should appear to be required; whether the suppression of certain passages, or the introduction of whatever new matter might be deemed necessary in order to bring the treatise to a level with the present views held in respect to the theory and the practice of obstetrics. Acting upon this free charter, M. T. has performed very skilfully and thoroughly his office of editor.

The plan of the present edition has been so completely modified that it may be regarded as an altogether new work. The chapters are grouped in eight principal parts. The first part treats of the anatomy and structure of the female organs of generation, and of their functions. The phenomena which these organs exhibit at certain periods being also very properly considered as the preludes of generation, render their preliminary study indispensable to all who would understand the changes which they undergo during the state of pregnancy. In the second part are examined the many and important modifications which certain of the female genital organs undergo during gestation. Subsequently is entered upon the study of the first cause of all these changes, to wit, the fœtus and its appendages, which are traced through the various stages of their development. From this examination are deduced the signs of pregnancy.

Labour is the subject of the third part of the treatise. After the consideration of labour, properly so-called, comes the study of the delivery of the after birth, and of the treatment of the puerperal state, with a consideration of the

attentions demanded by the woman during and after labour. An article also is devoted to the apparent death of new-born children. The consideration of the pathology of pregnancy, the subject of the fourth part, is greatly extended. Entire new chapters have been introduced in reference to the diseases of gestation, the alterations to which the placenta is subject, and the death of the child during intra-uterine life.

In the fifth part, devoted to difficult labour, are treated of in detail, deformities of the pelvis and all other causes of dystocia, the manner in which they respectively operate, their situation, whether in the mother, the child, or its appendages, the means by which their presence may be detected, the indications they present, and the means for their fulfilment. In the accounts given of hemorrhage and puerperal convulsions and of their indications will be found some new considerations. Artificial delivery of the after-birth, and the accidents to which it is liable are carefully considered.

The editor has introduced a new part (part 6), devoted to obstetrical therapeutics. It includes two chapters, the first being devoted to ergot, and the second to the effect of a debilitating regimen, and a certain course of medication upon the development of the child during intra-uterine life. The seventh part comprises a discussion of the employment of anæsthetics in labour, an account of the use of the tampon, and of all the obstetrical operations. The eighth and last part is exclusively devoted to the hygiene of the infant from birth to the period of weaning.

It is impossible by mere verbal description to give any accurate idea of the manifold improvements the work has received at the hands of its talented and accomplished editor; it is only by comparing the present with the former editions that the full extent and value of M. Tarnier's labours will be understood.

D. F. C.

ART. XXVI.—*Second Annual Report of the Metropolitan Board of Health of the State of New York*, 1867. 8vo. pp. 320. New York, 1868.

THIS Report, which embraces the proceedings of the New York Board of Health for the twelve months ending October 31st, 1867, is one of deep interest to the medical statistician and the political economist. From such documents, also, it is that the pathologist derives his materials for the construction of a reliable system of etiology, and the hygienist a proper and effective plan for the prevention of the more common and destructive diseases.

The report is well drawn up, and, in its several appendices, furnishes the details of the medical history of the territory embraced within its scope—the nature of the prevailing diseases, the condition of the localities, and the character of the communities among which they occur; together with the result of the measures undertaken with a view to remove, if possible, their endemic causes.

The district over which the jurisdiction of the Metropolitan Board of Health extends is composed of the city and county of New York, the counties of Kings, Westchester, and Richmond, and the towns of Newtown, Flushing, and Jamaica, in the county of Queens.

The total number of deaths in the city and county of New York, during the twelve months ending the last week in September, 1867, was 23,443. In Brooklyn, during the same period, the deaths were 8589. This aggregate of mortality includes all the deaths that occurred in the several public institutions situated within the limits of the counties of New York and Kings. In these institutions and in the other hospitals and asylums there were 4075 deaths. The deaths in New York, during the year ending as above, were 3152 less than in the preceding year. This gain in favour of life in that crowded metropolis may be claimed as the legitimate result of the improved hygienic condition of the city. Brooklyn shared equally with New York in this gain to the life and health of its people. Allowing for the absence of Asiatic

cholera as an epidemic, which in the period embraced in the report for 1866 destroyed 407 lives in the city, and 751 in the public institutions, against 88 deaths from the same cause in the succeeding year, the actual gain to the life and the sanitary condition of the city population is the more obvious; for the scourge of the previous year did not cease to menace the metropolis during the year 1867. The full significance of any such statistical evidence of gain to health and life will be appreciated only when another important fact is considered in regard to the unhealthful and epidemical influences which characterized the past summer. It was a season of incessant rains and of excessive atmospheric humidity extending over a wide extent of country; the larger towns suffering in consequence an unusual amount of fatal sickness. The infant mortality, and diarrhœal diseases, which continued through the summer, indicated a great degree of insalubrity. The deaths from these disorders, epidemic cholera excepted, nearly equalled the total mortality from the same causes and at like ages in the previous year. The statistical evidence presented would seem to indicate the fact that the gain has been mainly in the chances of life at the adult ages, and in those districts where the greatest amount of sanitary reform had been effected. By comparing the death record for the corresponding periods of the last two years, it will be seen that the districts of New York that had been most remarkable for insalubrity and high death rates, and in which sanitary measures had been most early instituted and most persistently enforced, though still less salubrious than the districts inhabited by well-housed and self-regulated classes, have experienced a relatively greater gain to life and to health.

The report presents an interesting review of the more prominent of the morbific causes which exist in and about New York, and of the measures which have been put in operation during the past year for their amelioration or removal. A general sketch is then given of the prevalence in New York during 1867 of yellow, typhus, and typhoid fevers.

Many of the special reports that make up the voluminous appendix to the general report are full of interest and instruction. The first three are respectively from the Sanitary Superintendent, the Superintendent of Tenement-Houses, and the Assistant Sanitary Superintendent. They present an exposition of the existing influences injurious to the health of the community, and of the means adopted with a view to their partial or complete abatement.

A report from the Registrar of Vital Statistics presents a summary of the census of the New York sanitary district, and of the record of deaths, marriages, and births, with some very just remarks on the improvements demanded in order to render more full and accurate the entire system of registration.

Under the head of "Infant death rates" we meet with the following important remarks:—

"The number of infants in New York that died before their first birthday was 7494, and in Brooklyn 3209. This is believed to be *little less than one-fourth of all the infants born alive in the year;* which is twice too high a death rate for the first year of infant life. But it is impossible to present this subject in the manner its importance demands until a full return is annually given of the births in each city.

"Upon this subject the Registrar would remark that he has good reason to believe that between one-ninth and one-tenth of all the children under five years of age in the metropolis, during one year, are, in the present state of the people, doomed to die in the course of the year. But if sanitary science is not a fable, and if the principles of physiolgy, and the lessons of experience and of medical observation are not altogether fallacious, it is true that fully one-half of this child mortality is preventible by sanitary measures.

"It is so important that the Board of Health, as well as the public generally, should neither be misled by nor become indifferent to this enormous waste of infant life, that we will here adduce a few facts which may aid in a discriminating interpretation of these high death rates of the child population. *First*, all history shows that, taken in a large way, the labouring classes are by far more prolific in child-bearing than the other classes of society. Another fact also appears to influence this result in regard to the prolific quality of the

labouring classes, though it has no relation to the physiological effect of their industrial and out-of-door occupations, namely—the fecundity of the classes (married) which are lowest in the social scale, and most degraded and improvident in their domestic life. This holds true especially in *the classes and the districts in which there is much sickness and high death rates.* Without stopping to present the statistical proofs and the physiological causes of this important law of fecundity in low-lived populations—a law that yet has many exceptions—we simply state the fact as it is.

"The *second* fact to be noticed concerning the excess of new-born children among the lowest classes is this, namely—that, as a rule, almost without exception, a high death rate in the nurslings and children under five years of age, in any city or district, is a very unerring index of an excessive death rate in the adult population of such city or place. Thus, if in one ward we find a high death rate in children, and if it is vastly higher than that in the children of another ward in the same city, then we shall find that the death rate is excessively high in the total number of the adult inhabitants of the first ward, while there is a very low death rate among the adults of the ward which buries the smallest percentage of its infants. Experience, then, proves that the infant death rate is a safe index of the general rate of mortality, both in the total population and in the adults of any city or district. *Lastly*, the respective death rates of infancy, adult life, and of the total population, in cities, wards, and larger districts, give valuable aids for the correct estimation of the state of the public health. And the infant death rate is found to be far the most trustworthy and quickly perceptible indicator of the local and other physical influences that affect the public health."

From *smallpox*, only nineteen deaths occurred during the year 1867, in New York, and but two in Brooklyn. This is the smallest amount of mortality in those cities, from this source, during any one year, since 1829; it includes what, until 1859, was not included—all the cases sent from the ships under quarantine. *Six* cases only died in the city, and twelve at the smallpox hospital, on Blackwell's Island, where are sent all cases from on ship-board, from emigrant institutions, as well as patients from the city. During the year 1867, there arrived at quarantine twenty-eight ships with smallpox on board. In London, Liverpool, and other foreign ports the contagion was unusually prevalent. That so few vessels arrived with the disease is attributed in the report, mainly to the care, now exercised in embarking emigrant passengers at British ports, to examine their arms for the evidence of vaccination. The good results of immediate domestic quarantine, and the disinfecting of the clothing of the sick by boiling or burning, have been, we are told, abundantly witnessed in the numerous cases of varioloid and about one hundred cases of variola that occurred in the city during the year.

Measles, scarlatina, and diphtheria, in New York and Brooklyn, destroyed during the year 2175 of the infant population. As a persistent and subtile foe scarlatina is to be more dreaded than cholera. It would be truly fortunate if definite and effectual prophylactic means could be applied to control or extinguish it. Until such means shall be discovered, there is but one course to pursue—for sanitary authorities and families to enforce the most thorough cleansing and ventilation, with the immediate disinfection, by boiling, or equally adequate means, of all clothing, bedding, etc., worn and used by the sick.

Of *typhus fever*, 199 fatal cases occurred in New York, and 22 in Brooklyn. Each of these cases has an important history, and teaches a practically useful history in hygiene. An offspring of personal and domestic filthiness, darkness, stagnant foulness of air, and famine, typhus fever perpetuates its infective virus wherever its germs find a lodgment amidst any such surroundings as those that first engendered it. The severe and very snowy winter of 1866–67 so shut up the poorer classes of city inhabitants within their dwellings, that the malignant outbreaks and rapid diffusion of the fever threatened much harm to the tenement population.

The 404 deaths from *typhoid* or *enteric fever* in New York, and the 159 in Brooklyn, served, we are told, in a general way, and not unfrequently in a very particular manner, to point out local sources of unhealthfulness, and these,

mostly, in respect of drainage and the proper care of excrementitial filth. It is very pertinently remarked that, as the city sewerage system becomes more and more generally extended, the utmost care must be taken in order to prevent the sewers and their myriad connections from becoming a vast congeries of hidden, fever-breeding cesspools, from whence may emanate a poison that is capable of generating malignant disease among those who feel themselves secure under the impression that they are far removed from any of the causes of such disease.

During the autumn of 1866 there were numerous fatal cases of *erysipelas* and *puerperal fever*. In regard to the latter disease, much anxiety existed among thoughtful obstetricians in the down-town districts where it most prevailed. During the period included in the report there were 79 fatal cases of child-bed fever, and 116 of erysipelas, the latter occurring mostly in hospitals or in very filthy and crowded localities. The fearfully positive teachings of medical experience (we use the exact words of the report) in regard to the infectious and readily portable nature of puerperal fever, and in regard to the interchangeable character of this fever poison and that of erysipelas, have induced in all well-informed obstetricians in the cities referred to an especial degree of caution and conscientious effort to avoid all the causes capable of producing the latter, as a safeguard against the occurrence of the former.

"That there should have been only 60 cases of pyæmia in the two cities, and in a hospital population of nearly 20,000 patients of all kinds, might seem to be a matter of congratulation. But when we consider that, in a majority of instances, this destructive zymosis is engendered by foul air within crowded wards, and by the inherent defects of hospital construction and ventilation, this record, like that of fatal erysipelas, points specifically to unsanitary circumstances connected with the existing hospitals. Besides these sixty deaths by pyæmia, there were nineteen by osteo-myelitis, which, previous to the recent advances in surgical pathology, would have been recorded under the former name, or under that of surgical fever."

The total quantity of diarrhœal disease in New York and Brooklyn, week by week, month by month, and year by year, indicates with a kind of mathematical and chemical certainty the total death pressure of putrescence and defilement of the atmosphere in the sickly districts. The total number of deaths from diarrhœal diseases in the period included in the report is 4404. Asiatic cholera caused only 101 of these deaths.

An all-important circumstance has characterized "*the diarrhœal and cholera fields*," during the years 1866 and '67. It is that the boundaries and areas of these sections of the city were coincident and almost identically the same in the last as in the previous year. There was this difference, however: the extent of some of these fields of bowel disease was diminished, but only in those districts in which sanitary measures—the enforcement of cleanliness by scavenging and washing have been particularly thorough and unremitting during the summer of 1867. The fatal force or *lethality* of these diseases was apparently diminished in the latter districts. In certain localities that were in 1866, by the unusual rain-falls, saturated with surface moisture, and possibly by the wash of sewers, there was a greater amount of fatal diarrhœal disease, exclusive of cholera, in 1866 than in 1867. Similar experience in various undrained sections of Brooklyn taught the same practical lesson as did the persistent haunts of bowel diseases in New York—the importance, namely, of sanitary drainage and sanitary cleansing.

From *phthisis pulmonalis* 3286 deaths took place in New York during 1867, and 1161 in Brooklyn. Injurious occupations of a particular kind, or, rather, hurtfully conducted trades, unventilated, cold and damp workshops, churches, shool-rooms, and other places of assemblage; still more, unventilated, damp and overcrowded dormitories, and close, unlighted and damp sitting-rooms are among the chief sources of pulmonary phthisis in our cities.

Our records show, according to the report before us, that the death rate by consumption is much greater in some districts than in others, and also in some classes of dwellings than in others. For example, it is found that in the southern half of the 21st ward—the wet flank of Murray Hill—the mortality from consumption bears a ratio to that in the northern and elevated half of the

same ward, which in 1867 was as 75 to 55—Bellevue Hospital being excluded from the records of the former section. It is found, also, that in particular blocks of dwellings the death rate from consumption is thrice greater than in other and better blocks, the census of population being the basis of the calculation.

We recommend this report to the careful study of all whose duty it is to investigate the causes of the unhealthfulness of cities and communities, with the view to the application of means that are adapted to improve their sanitary condition. D. F. C.

ART. XXVII.—*Clinical Lectures on the Principles and Practice of Medicine.* By JOHN HUGHES BENNETT, M. D., F. R. S. E., etc. Fifth American from the fourth London edition. With five hundred and thirty-seven illustrations on wood. 8vo. pp. 1022. New York: William Wood & Co., 1867.

To all who desire to obtain a correct idea of the somewhat novel views inculcated by Dr. Bennett in respect to pathology and practice, especially those on the treatment of inflammations and acute diseases generally, and of the facts and chain of reasoning upon which those views are based, we would recommend a careful perusal of the volume before us. Whether convinced or not of the correctness of the author's views as legitimate deductions from the data adduced in their support, the practical physician will nevertheless derive from the study of the treatise many suggestions calculated both to interest and to instruct.

In the present edition of these lectures there will be found many important additions. Thus, in Section 2, has been introduced an account of the molecular and cell theories of organization; while the description of the general laws of nutrition and of innervation in health and disease, and the account of inflammation also, and of tuberculosis, have been rewritten. In Section 3, new considerations on the subject of general therapeutics have been introduced; and, under different heads, reference has been made to the natural progress of disease; to the knowledge derived from an improved diagnosis and pathology; and to the fallacy of the change of type theory. An inquiry is, likewise, entered into as to our present means of treatment; and in support of the proposition that physiology and pathology constitute the true foundation for therapeutics.

The accounts given of the diseases of the nervous, digestive, and circulatory systems have been carefully revised and considerably enlarged. In Section 7 the author has tabulated every case of acute pneumonia treated by him in the Royal Infirmary of Edinburgh since the year 1848, in order to exhibit the efficacy of "the restorative, not stimulating," treatment advocated by Dr. B.

The subject of diabetes has been further illustrated by additional cases, and the results of a very full trial of sugar as a remedy for the disease are recorded. Certain views concerning the diagnosis and etiology of typhus and typhoid fevers have been reinvestigated. The result of a careful trial of the wet sheet in scarlatina is detailed, and a singular new fact indicated in the history of mercurial poisoning.

The "clinical lectures" of Dr. B. cannot fail to prove a valuable addition to every medical library. An acquaintance with their teachings will prove that the principles they inculcate are something more than hypotheses, and the practice they advocate more rational and successful than has generally been believed. D. F. C.

ART. XXVIII.—*Hufeland's Art of Prolonging Life.* Edited by ERASMUS WILSON, F.R.S., etc. etc. 12mo. pp. 298. Philadelphia: Lindsay & Blakiston.

THIS work of Christopher W. Hufeland, the learned and experienced Professor of Medicine in the University of Jena, "in the olden time," has been before the public some three-quarters of a century, and may even now be consulted with profit as an authoritative treatise on the macrobistic science. As Dr. Wil-

son remarks, the reader of the book will probably be struck, as was the editor, with the little real progress which has been made in the science of living during the long period which has elapsed since the treatise was first written; and the feeling of a necessity of bringing its teachings up to the present state of our knowledge will be dissipated by its perusal. Either of its chapters, which discuss topics of a strictly hygienic character, might indeed be made with propriety and without the necessity of any material alteration, a part of a treatise of the present day on the "art of prolonging life." Hufeland appears on some points to be in advance of certain of the macrobiologists of the present age. While they class spirituous drinks among the alimentary fluids, and maintain that their use is important for the preservation of health, he ranks the use of "all preparations of spirituous liquors, under whatever name known, as tending in a particular manner to shorten life. They accelerate vital consumption in a dreadful manner; and make life, in the properest sense, a process of burning."

In presenting his edition of Hufeland's treatise, Dr. Wilson has adopted the very excellent English translation of 1794, with no other alterations than where required in order to adapt the style to the modes of thinking and feeling of our own times, corrections of certain German idioms and modes of expression, the omission of a few prosy disquisitions of no intrinsic value, and the addition of an occasional necessary note. D. F. C.

ART. XXIX.—*The Principles and Practice of Obstetrics.* By GUNNING S. BEDFORD, A. M., M. D., Professor of Obstetrics, the Diseases of Women and Children, and Clinical Obstetrics in the University of New York, etc. etc. Illustrated by four coloured lithographic plates, and ninety-one wood engravings. Fourth edition, carefully revised throughout, and enlarged. 8vo. pp. 763. New York: William Wood & Co., 1868.

WE are pleased to find, by the appearance of a new (the fourth) edition within five years of the preceding one, that the work before us maintains that popularity with the obstetric student and with the medical profession generally to which its merits so justly entitle it. As a trustworthy guide to the present state of the science and the practice of midwifery, it is sufficiently copious and exact to become to the practitioner a reliable book of reference on questions of difficulty or doubt, where he can acquire correct information as to the present state of opinion and practice among the authorities of the profession, backed by the result of the author's own observations and deductions.

The chief additions made to this fourth edition consist in some further observations on the subject of anæsthetics, at the close of Lecture XLVII., and a new Lecture (XLVIII.), in which are discussed various topics of deep importance, such, for example, as chorea, paralysis, aberrations of mind, jaundice, etc., as complications of pregnancy and the puerperal state. The author claims to have, also, embodied in the present edition additional remarks on the subject of twin pregnancies; we can only say that after a very thorough examination of the work, we have failed to discover those additions. D. F. C.

ART. XXX.—*Annual Abstract of Therapeutics, Materia Medica, Pharmacy, and Toxicology for* 1867; *followed by an original Memoir on Gout, Gravel, and Urinary Calculi.* By A. BOUCHARDAT, Professor of Hygiene to the Faculty of Medicine, Paris; etc. Translated and edited by M. J. DE ROSET, M. D., Adjunct to the Professor of Chemistry, Univ. Maryland, etc. 12mo. pp. 314. Philadelphia: Lindsay & Blakiston, 1868.

THE therapeutic annual of Bouchardat is widely known, and is everywhere received with respect. Dr. Roset has very fairly rendered the original text, and placed the substance of Bouchardat's summary for 1867 within the reach of all who are not able to read the French language. To the attention of this class, which ought not to be very large, we cheerfully commend Dr. Roset's work. W. S. W. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Influence of Certain Fibres of the Cardiac Branches of the Pneumogastric in Effecting Dilatation of the Vessels and Diminishing the Frequency of the Heart.*—MM. Cyon and Ludwig believe that they have established on an experimental and sure basis the very interesting physiological fact, that one of the cardiac branches of the pneumogastric contains fibres which possess the remarkable power of effecting dilatation of the vessels, and of coincidently diminishing the frequency of the beats of the heart. They propose to call it the *depressor* nerve. A double interest is attached to this, since, if correct, it adds another instance to those already known of inhibitory nervous action, whilst it is opposed to the general proposition laid down by Marey, that the heart beats more frequently in proportion to the diminution of the resistance offered to the discharge of its contents.

The nerve in question springs, in the rabbit, either from the superior laryngeal alone, or from that nerve and the pneumogastric trunk, applies itself to the carotid artery, and runs down close by, but quite distinct from, the sympathetic nerve. It terminates by uniting with branches of the ganglion stellatum, and forming a plexus between the aorta and pulmonary arteries.

The first experiment made on this little nerve consisted in dividing it, and exciting the lower cut surface tetanically by an interrupted current. The result was *nil*. On applying the same irritation to the upper cut surface it was immediately observed that the pressure of the blood in the vessels began to diminish, ultimately reaching the half, or even one-third of the original amount, and this not only in the carotid, but also in the crural arteries—an effect that was visibly owing to a diminution in the calibre of the aorta. Coincidently with the diminution of the blood-pressure, the frequency of the beats of the heart was observed to diminish, and this occurred even when a large portion of the trunk of the pneumogastric below the point where the superior laryngeal is given off was excised. The retardation was most remarkable at the commencement of the experiment. If the experiment was prolonged whilst the pressure continued to be diminished, the frequency of the heart's action generally regained its normal standard, showing that there was no direct connection between the two. It was further shown that the depressor nerve did not act by diminishing the *force* of the cardiac beats, and thus leading to a diminution of the pressure in the vessels; since on dividing the pneumogastric, and excising the upper portion of the sympathetic in the dorsal region and the ganglion stellatum, with all its branches, irritation of the centric cut surface of the depressor nerve was still followed by diminished pressure in the vessels. And hence, as all reflex paths by which it might have acted on the heart had been removed, the only explanation that remains is that it acts by diminishing the resistances to the

onward passage of the blood. MM. CYON and LUDWIG at once set to work to determine the correctness of this opinion; and, remembering the influence stated to be exerted on the vessels by the splanchnics, they instituted some experiments on these nerves. They found that section of the splanchnics, effected a marked lowering of the pressure in the vessels, whilst irritation of the peripheric cut extremity was speedily followed by exaltation of the pressure. Irritation of the centric extremity was not followed by any observed result. On thinking over these results, it struck them that the depressor nerve might act reflectorially on the vessels through the splanchnics; and the experiment suggested itself of dividing the splanchnics, when, if their view was correct, irritation of the depressor should be of no effect. Moreover, it was already known that compression of the aorta was followed by exaltation of the pressure; and it was therefore natural to expect that, if compression were made, irritation of the depressor should again be followed by very slight, if any, result. Both experiments turned out as they expected. They therefore believe they have established the fact that the small nervous twig, with the above-mentioned relations, possesses the power of reflectorially diminishing the tone of the vessels, and is to be classed as one of the most striking instances of inhibitory action, other examples of which are found in the influence of the vagus in arresting the action of the heart, of the chorda tympani on the vessels of the glandula submaxillaris, and of the nervi erigentes on the male sexual organs.—*Lancet*, Aug 1, 1868.

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2. *Origin of Infusoria.*—Prof. BENNETT, in a lecture "On the Atmospheric Germ Theory and Origin of Infusoria," delivered before the Royal College of Surgeons, Edinburgh, on January 17, 1868, stated the conclusions to which he had been led by observations conducted by him for a number of years. He considers that the infusoria, "vegetable and animal, which we find in organic fluids during fermentation and putrefaction, originate in oleo-albuminous molecules, which are formed in the fluids, and which, floating to the surface, constitute the primordial mucous layer of Burdach, the proligerous pellicle of Pouchet. There, under the influence of certain conditions, such as temperature, light, chemical exchanges, density, and composition of the atmospheric air, and of the fluid, &c., the molecules by their coalescence produce the lower forms of vegetable and animal life." He carefully describes the movements of bacteria and vibriones; and the disputed question as to how these grow in length he has settled by actual observation. On two occasions he saw two isolated bacteria unite together lengthways, so as to form a single moving filament. He points out that the so-called germs, collected by Pasteur from the air by means of gun-cotton, are wholly unlike the great majority of the particles we see in the proligerous pellicle. Moreover, these so-called germs, when they can be detected, are exceedingly few in number, whereas any fragment of the proligerous pellicle is crowded with incalculable numbers of molecules, for which, he contends, Pasteur's germs are wholly inadequate to account. The notion that the molecules of the pellicle multiply by division he considers opposed to the fact that they always appear before the vibriones, and evidently unite to produce these: further, he says, "if the primary molecules on the surface of an infusion possess the property of dividing, they cannot at the same moment possess the property of elongating and forming filaments. The one function is subversive of the other. While, then, a cell or vibrio may possess the property of growth and division, these two functions must be exercised at different periods of time, so that, in reference to the early stage of formation, if the molecules divide, bacteria and vibrios could not be formed. A mass of vibrionic molecules is not a compound organism; it is a mere aggregation of similar simple elements. Each of these in passing through certain phases of development may be arrested, or reach maturity at various periods, so that we frequently see different forms present at one time; but that the same forms and the same stages of growth should exhibit directly opposite functions, is surely not in accordance with physiological knowledge." Therefore his conclusion is that the vibriones and other filaments are evidently formed from the molecules, and not the molecules from the filaments. He has also performed numerous experiments, with a view to determine whether or not it be possible to prevent the development of infusoria in a

fluid by means calculated to destroy germs. These experiments were similar to those performed by Schutze, Schroeder, and Dusch, and others, with this difference, that he in every case used nearly all the agents which have been proposed to destroy germs. These experiments have convinced him, that although means be used sufficient to destroy germs in an infusion and in the air in contact with it, infusoria are developed notwithstanding. In conclusion, he points out that these facts and arguments are hostile to the doctrines "omne vivum ex ovo," "omne cellula e cellula," and lastly directs attention to many circumstances which show that organic forms are first produced, and vital properties are afterwards added to them.—*Edinb. Med. Journ.*, March, 1868.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Bromide and Bi-bromide of Mercury as Therapeutical Agents.*—Dr. Protheroe Smith, in a paper read at the *Brit. Med. Assoc.*, states that he has used the bromide and bi-bromide of mercury for upwards of five years, and had found the bromide valuable as an efficient cholagogue and purgative, promoting absorption of morbid tissue with less constitutional disturbance than from calomel. He cited instances, and called on members of the Association to aid him by their efforts further to investigate the subject and to prove his conclusions.—*Brit. Med. Journ.*, Aug. 8, 1868.

4. *On the Anæsthetics of the Present Day.*—Dr. A. Ernest Sansom, in a paper read before the *Brit. Med. Assoc.*, reviewed the anæsthetics now employed with reference to their special advantages in special cases and circumstances. The employment of nitrogen proved that anæsthesia could be induced by the mere deprivation of oxygen. It induced the accumulation of carbonic acid in the blood, so that its administration was really equivalent to the administration of carbonic acid. Nitrous oxide had shown special advantages in cases of dentistry. The author considered that it acted chiefly by filling the lungs with a gas which could not sustain the normal processes of aeration, but he thought that it also had a special action on the blood. He considered that great care should be used in its employment, and it should not be given to any patients suffering from pulmonary, cardiac, or cerebral affections; it should certainly not be employed for any prolonged operation, but to the dental surgeon it was a great boon, inducing a rapid anæsthesia and being followed by an immediate recovery. It should only be trusted in skilled hands, and should then be used with caution. Inasmuch as both these agents induce their effects by the superinduction of an excess of carbonic acid in the blood, he recommended a renewed trial of this anæsthetic, which had been formerly employed with advantage. Briefly alluding to tetrachloride of carbon and bichloride of methylene, the author next turned to chloroform, the great danger of which was the large and unnecessary proportions which were administered. By a very large number of calculations, the author proved that by the common means adopted, atmospheres of from three to ten times the necessary strength were employed. He determined that the best diluent for chloroform is absolute alcohol; and if practitioners would use a mixture of equal parts of chloroform and alcohol, danger would be reduced to a minimum.—*Brit. Med. Journ.*, Aug. 8, 1868.

5. *Anæsthesia and the Mode of Action of Anæsthetics.*—Dr. Sansom considers that it is particularly important now that much attention be directed to practical anæsthesia, to determine the *rationale* of action of anæsthetics. He criticized the theory of their direct action on the central ganglia of sensation, which he considered disproved by many facts. On the contrary, they presented in their action a complete similarity with the phenomena of deprivation of oxygen. Tracing the action of a typical anæsthetic, the author showed that it

acted both as a cardiac and vaso-motor stimulant: it contracted the systemic arteries, producing a condition of insufficient supply of arterial blood. Dr. Sansom entered into a critical examination of the analogies and correlations of this condition, showing, first, an identity with cold and with galvanism, which by a similar action produced similar results; he traced the effect upon the capillary circulation, showing that the velocity of the latter was diminished, but the blood was expressed towards the venous channels in which it accumulated, hence the distension of the right side of the heart witnessed in *post-mortems*. Chloroform, however, when its vapour is insufficiently diluted with air, has the power of superinducing paralysis of the cardiac and vaso-motor forces—hence its danger. Anæsthetics act on the blood-corpuscle, especially in the hæmoglobin, impeding its oxygenation. The author concluded that anæsthetics produce these phenomena by inducing a suppression of oxidation in the body, 1, directly by acting on the blood; 2, indirectly, by modifying the forces by which the blood is circulated; and that they have no special action on sensory ganglia.—*Proceed. Brit. Med. Assoc., Brit. Med. Journ.*, Aug. 8, 1868.

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6. *Therapeutical Uses of Bromide of Potassium.*—Dr. J. RUSSEL REYNOLDS, in a paper (*The Practitioner*, July, 1868) on this subject, thus sums up the value of this drug in spasmodic affections: 1. That its efficacy is most marked when the malady is "paroxysmal." 2. That its value is high in proportion as the disease approximates the type of convulsion known as "epileptic;" and 3, that when spasmodic movements are "habitual," be they either tonic, or clonic, local, or general, its remedial influence is, at best, extremely doubtful.

In the treatment of certain diseases affecting the cerebral centres in such a manner as to prevent sleep, bromide of potassium has proved of great utility. Here it is necessary to give the drug in such large doses as thirty or forty grains at the ordinary bedtime, and to repeat it frequently in smaller doses, of ten or fifteen grains, during the day.

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7. *Action of Bromide of Potassium.*—According to Dr. PLETGER'S observations on the human organism, bromide of potassium weakens the energy of the heart's action, and reduces the frequency of its beats, so that the pulse is frequently as low as 50. Large doses of the salt produce somnolency, loss of memory, and mental depression, and in some cases imbecility. These symptoms quickly disappear after suspension of the remedy or a reduction to smaller quantities. The continued administration of large doses causes more or less incapacity for voluntary movements, or a disinclination to perform them. The subject reels and stumbles when walking, whilst in other instances there is muscular debility of the arms without sensations of vertigo and disturbance of equilibrium. The motor nerves seem to be paralyzed through the action of the bromide. The bodily temperature is lowered. The action of the salt upon the digestive organs is manifested by a mild gastric catarrh with a tendency to vomiting, an obstinate constipation after large doses, and redness of the oral and pharyngeal mucous membrane; cough and slight catarrh of the upper air-passages are sometimes produced, and, after doses of from one to two drachms, some dyspnœa. Against abnormal irritability of the genital system the bromide acts with undoubted efficacy; as a remedy for spasm and increased reflex action of the nervous centres, it excels all other means.—*Deutsche Klinik*, No. 10, 1868.

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8. *Therapeutical Use of Belladonna.*—In our last No., pp. 258–9, we gave a brief notice of Dr. GEORGE HARLEY'S views in regard to the action of belladonna as related in his Gulstonian Lectures. We shall now lay before our readers a more particular account of his conclusions.

"A study of the physiological action of belladonna," he says, "has led me to regard the plant in a new light as a curative agent. First and foremost, it is a direct and powerful stimulant to the sympathetic nervous system, or, in other words, to the heart. Secondly, it is a potent diuretic. Thirdly, by virtue of its stimulant action on the circulation, it is a means for increasing the oxidiz-

ing processes within the body. Its influence as an anodyne is so fully acknowledged, that I shall omit consideration of this action upon the present occasion.

"First, as a *cardiac stimulant*. It is remarkable that this, the primary and essential operation of belladonna, should have been so long neglected. This plant should stand at the head of all our stimulants; for there is no medicine in the whole materia medica which at all approaches belladonna in its simple, direct, immediate, and powerful influence in exalting the force and rapidity of the heart's action. In all conditions and diseases, therefore, in which there is a depression of the sympathetic nervous influence, such as syncope from asthenia, or shock; in the collapse of cholera; in failure of the heart's action from chloroform or other cardiac paralyzers—the subcutaneous use of sulphate of atropia, in doses varying from the hundredth to the fortieth of a grain, is the appropriate and most hopeful means of resuscitation.

"With a view more of ascertaining the influence of belladonna in progressive failure of the heart's action in inanition, than of hoping for a permanent good result, I injected the two hundred and fortieth of a grain of sulphate of atropia into the arm of an infant ten weeks old, at a time when, excepting a few beats now and then, the pulse was imperceptible at the wrist, and the cardiac systoles only 80. Within four minutes, the pulse rose to 100, and each beat was quite perceptible at the wrist. In eight minutes, it had increased to 110, and was quite regular and distinct. The stimulant continued for the next three hours; and at the end of this time the pulse was 100, of good volume, and of sufficient force to bear compression without obliteration. The respiration remained unaltered, and the pupils dilated from one-twelfth to one-seventh of an inch. The stimulant effect upon the pulse continued to within half an hour of the death of the child, five hours and a half after the injection of the atropia.

"As a *diuretic*, belladonna may be used in cases of *suppression of urine*, whether accompanied by uræmic symptoms or not. As both the sluggish circulation and the torpid kidney are simultaneously aroused by the medicine, there is ground for expecting a restoration of the renal secretion.

"In *acute nephritis*, we may hope for beneficial results from the use of belladonna, which, coming in contact with the irritated and congested organ, will doubtless calm the nervous irritation, and at the same time contract the dilated bloodvessels. I am at the present time busily employed in determining the effects of its operation in congested and inflammatory conditions of the kidney; and, so far as my experience goes, I am led to expect beneficial results in both states.

"In *chronic albuminuria*, belladonna, I believe, will prove very serviceable, provided that the kidney has not passed into the degenerative stage bordering on fatty degeneration. In one case, Charles E., aged 35, who had been under my care for three months for an acute attack of nephritis, commencing with excessive œdema of the legs and exudation of albumen, I administered a single dose of atropia with the following result. On the 10th of January, he had so far improved under the influence of astringent chalybeates and hydragogue purgatives, that there remained but slight pitting of the integuments over the tibia; and the urine, when boiled and heated with nitric acid, gave only a small precipitate of albumen—enough, however, to render the fluid completely opaque from the presence of small flocculi of albumen. At 8.30 P. M., on the day above mentioned, I injected the forty-eighth of a grain of sulphate of atropia beneath the skin; and he passed at that time urine A. The atropia produced full effects; and at 10.30 P. M., when these had passed off, he voided urine B with some difficulty and in small driblets. Urine A had a specific gravity of 1022.4, and contained exactly a grain of albumen in 1000 grain measures. Urine B was of specific gravity 1024.4, and contained only half the quantity of albumen present in urine A. Four days afterwards, the patient presented himself at the hospital, and reported himself quite well. The œdema of the legs was entirely gone. He passed urine in the prescribing-room; and repeated examination by my clerks and myself showed that the albumen had quite disappeared. The patient has not attended since, from which I infer that he continues well. He had presented himself regularly at the hospital the previous three months, and the urine was regularly examined. The albumen was observed to be slowly diminishing in

quantity, but it had never been absent from the secretion. It appeared, in this case, that the kidneys had received a sudden impulse to healthy action.

"In another case, that of John B., aged 25, who had been under my care for two years continuously for acute, passing into chronic albuminuria, the albumen, which had long been stationary, began to decrease rapidly in amount under the influence of the same treatment.

"The effect of a powerful dose of atropia upon the kidneys in chronic albuminuria is well seen in the analyses above given. It will be observed that there was a decided diminution of the albumen during the operation of the medicine. The result by the operation of belladonna in these cases must be accepted as the best proof of the condition of the bloodvessels generally during that operation. It is quite clear that there is no impediment from contraction of the arteries on the one hand, or from dilatation of the capillaries on the other, to the flow of blood through the kidney. On the contrary, it appears that the vessels of the gland are aroused by the action of the drug into a healthy state of excitement; a condition highly favourable for the nutrition of the organ, and the removal of chronic disease. As a means of promoting oxidation of the blood, belladonna will doubtless prove of essential service in the uric and lactic acid diatheses. I have employed it in rheumatic fever with marked success. I inject the fiftieth or fortieth of a grain of the atropia salt into the integument over the affected joint, as soon as the first indication of inflammatory action arises in the part. The anodyne action is so direct, speedy and enduring, that the use of opium, which, excepting for its anodyne and hypnotic actions, is decidedly objectionable in this disease, is altogether unnecessary. The subcutaneous use of atropia in other acute diseases is a wide field for inquiry, and promises, as far as my observations extend, to be a most interesting and encouraging one."—*Brit. Med. Journ.*, April 4, 1868.

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9. *Combined Operation of Belladonna and Opium.*—Dr. GEO. HARLEY, in his *Gulstonian Lectures*, remarks, "There are a number of persons who accept the general statement, deduced from a number of observations, the majority of which are very loosely reported, that belladonna is antagonistic to opium, and *vice versâ;* and they would not hesitate in a case of poisoning by either of these drugs to give at once an equally poisonous dose of the other as an antidote. I have no time at present to criticize the cases from which such conclusions have been derived; but, feeling that the whole question required most patient and careful examination, I have devoted much time during the past year to its elucidation.

Dr. H. then related the effects of opium and belladonna separately and combined on the horse and dog, and draws the conclusion from these experiments that in the animals mentioned opium and belladonna intensify each other's action.

"In turning now," he remarked, "to the consideration of the combined operation of opium and belladonna in man, I must first concede that belladonna possesses an antagonistic influence to some of the earlier effects of the operation of opium. The first effect of opium, in many animals as well as in many of the human kind, is a derangement of the vagus nerve, resulting in nausea and retching, faintness, and depression of the heart's action. The dog invariably vomits within five minutes of the subcutaneous use of morphia; and, in my own practice, I have had four or five patients in whom the subcutaneous use of seven drops of laudanum, or of one-twelfth of a grain of acetate of morphia, has produced faintness, nausea, ending in vomiting and retching, with intervals of delirious somnolency for eight or nine hours. By repeated experiments upon these individuals, I have found that the previous or simultaneous use of a small dose (one-ninety-sixth of a grain) of sulphate of atropia entirely prevents these distressing and often alarming symptoms; and I have even arrested them after they have been fully developed by the subsequent use of the atropia. It is by virtue of its powerful stimulant effect upon the sympathetic nervous system, that the derangement of the vagus nerve, causing the above mentioned symptoms, is overpowered. This is a most important fact; for, by the help of atropia, we may, I believe, bring *all* individuals alike under the beneficial influence of opium. The only question of antagonism that now remains, is that which might be sup-

posed to result from this same stimulant effect of belladonna upon the heart; and it may be asked, 'Would not this action alone be sufficient to arouse a patient in whom the pulse and respiration were well nigh obliterated by the effect of opium?'

"I answer, inasmuch as belladonna has no stimulant action upon the vagus nerve, and therefore no influence upon respiration, no other result can be expected from the operation of belladonna, in a case of poisoning by opium, than that which would follow its administration in any other similar case of depression of the cardiac and respiratory functions. It will doubtless arouse the heart, but there is little hope of increasing the breathing; while, on the other hand, the atropia, if given in a large dose, will only deepen the stupor. As a cardiac stimulant, the dose should never exceed the ninty-sixth of a grain, repeated at an interval of an hour and a half or two hours.

"With these preliminary remarks I come now to consider the combined operation of opium and belladonna upon man; and I may say, generally, that it is precisely such as I have already described as occurring in the dog. The following experiments, which are in strict accordance with a great number of similar ones made upon almost every variety of constitution, will, I think, when taken with the foregoing experiments upon the horse and dog, conclusively prove that in man also opium and belladonna have not the antagonistic action which has been attributed to them.

"1. Samuel M., aged 49, pulse 75, pupils one-ninth, tongue moist. I injected one-quarter of a grain of acetate of morphia into the arm. In one hour, the pulse was accelerated two beats, its volume and power unchanged; pupils one-tenth. In two hours, pulse was decreased nine beats, slightly diminished in volume; pupils one-twelfth. The dose produced a sleepy, tranquillizing effect, but he did not sleep nor require to make any effort to keep himself awake; the mouth remained moist throughout.

"2. Some days afterwards, I injected the one-forty-eighth of a grain of atropia. In ten minutes, the pulse was accelerated 45 beats, the pupils slightly dilated, the tongue dry at the tip. In 30 minutes, pulse as last mentioned, pupils one-fourth, tongue dry and brown, hard and soft palates dry and glazed. In one hour, the pulse was accelerated 32 beats; he felt a little dozy; the mouth and pupils were as at 30 minutes. In an hour and 40 minutes, the pulse was accelerated 17 beats; the dryness of the tongue was reduced to a narrow streak; pupils as before.

"3. On a third occasion, I injected one-fourth of a grain of acetate of morphia one hour after the injection of the forty-eighth of a grain of sulphate of atropia; when the pulse was accelerated 25 beats, and the pupils dilated to one-sixth; the tongue and palate completely dry. Fifteen minutes after the injection of the morphia, the pulse was accelerated 35 beats; mouth and pupils unchanged; he felt very sleepy. An hour afterwards, the acceleration of the pulse was still 35 beats; pupils one-sixth; the mouth, which had continued parched up to the present time, was moistening; but the back of the tongue and throat were dry and parched. He continued sleeping. In an hour and three-quarters after the injection of the morphia, the pulse was accelerated 30 beats; pupils rather more than one-sixth; mouth moist. He continued sleeping. The effect was charming. He fell off to sleep fifteen minutes after the morphia, and continued to sleep soundly and continuously, breathing 16 tranquilly, by my side, and opposite a bright gas-lamp, for two hours, when I completely aroused him. It is to be observed, on the one hand, that the opium prolonged the belladonna effects very considerably, while it failed to prevent dilatation of the pupil; and, on the other hand, that the atropia greatly increased the narcotic effects of the opium.

"4. On another occasion, I reversed the former experiment on the same individual; and, an hour after the operation of the fourth of a grain of acetate of morphia, when the pulse was accelerated 5 beats; the pupils one-twelfth; respirations 15; the tongue moist and clean; and he was feeling sleepy, but not so much so as to sleep, I injected the forty-eighth of a grain of sulphate of atropia. In twelve minutes, the pulse was accelerated 42 beats, and increased in power; pupils dilated to one-tenth; respirations 14. 'He felt heavier for sleep.' In thirty minutes, the pulse was accelerated 50 beats; pupils nearly one-seventh;

the anterior half of the tongue and the whole of the hard and soft palates were completely dry; the latter glazed. He was sleeping. In one hour, the pulse was accelerated 40 beats; pupils one-seventh; tongue dry and brown; respirations 12, regular; cheeks and forehead slightly suffused, and warmer; sclerotic a little injected. He was sleeping. In an hour and a half, no change in pulse or mouth; pupils a little larger; respirations 14. He was very sleepy and giddy still, and walked very cautiously. The drowsy feeling, which existed before the injection of the atropia, increased fifteen minutes after the injection of the latter to an inability to keep awake; and he continued to sleep soundly by my side, in front of a bright gas-lamp, for more than an hour, when I was obliged to leave him. He reported that, compared with former injections, he slept unusually soundly the night following this injection; and he voluntarily remarked, that the combined doses had a much more powerful hypnotic effect than the morphia alone. It will further be observed, that the previous operation of the morphia predisposed the system to the influence of atropia, since the effects of this latter were also in this case intensified and prolonged, as will be seen on reverting to Experiment 11.

"Opium does not prevent nor retard, so far as I have been able to determine, the elimination of atropia from the system."—*Brit. Med. Journ.*, April 11, 1868.

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10. *Physiological Action and Therapeutical Use of Hyoscyamus, alone and in Combination with Opium.*—Dr. GEO. HARLEY states (*Gulstonian Lectures*), that "Hyoscyamus, or its active principle, when given in small doses, and such as are insufficient to produce positive dryness of the mouth, rapidly subdues ordinary excitement of the pulse, and reduces it, within an hour or two, to its slowest rate; that is to say, to that condition in which it may occasionally be found after a long period of complete rest of mind and body. For example, the pulse of a man ordinarily engaged shall be 80. After a small dose of hyoscyamus (one-fortieth of a grain of sulphate of hyoscyamia, or four drachms of tincture of henbane), it will gradually fall to 60 or 50. In another person, whose pulse may be 72, we shall at the end of the same time find it steadily beating about 45. Schroff states that the three-hundred-and-thirty-third of a grain of hyoscyamine reduces the pulse from 79 to 18. In all my experiments with hyoscyamus and its active principle, I have never observed the pulse to fall lower than 42.

"After doses (one-sixteenth to one-twelfth of a grain) sufficient to produce complete dryness of the tongue and hard and soft palates, the pulse will generally experience an acceleration of ten or twenty beats, and be increased slightly in force and volume. This change in the pulse will be observed in from ten to twenty minutes after the subcutaneous injection of hyoscyamine; the acceleration does not usually continue for longer than twenty or thirty minutes, and rarely lasts for an hour. Then the pulse slowly declines, and gains a little in force and volume. It usually decreases about five beats for every interval of twenty or thirty minutes, until, at the end of from an hour and a half to two hours, it attains its minimum rate. Apart from these accelerating or depressing effects upon the pulse, the following symptoms will be observed after moderate doses (one-thirtieth to one-twenty-fourth of a grain). In ten to twenty minutes from the time of injection, the tongue more or less completely dry, rough, and brown, the hard and soft palates dry and glazed, excessive giddiness, and a weight across the forehead, somnolency, the cheeks occasionally a little flushed, and the membranes of the eye sometimes slightly injected. After continuing for about an hour, these symptoms pass off; and the tongue and hard and soft palates become covered over with a sticky, acid, offensive secretion, agreeing in all respects with that observed after the action of belladonna. The pupils slowly dilate during the latter part of the action of the medicine, and at its close attain their maximum degree of dilatation.

"If larger doses than one-twelfth of a grain be given, the above mentioned effects will be increased in degree, and prolonged for two or three hours; and they will be accompanied either by wakeful, quiet, and usually pleasing delirium, with illusions of the sight; or with such excessive somnolency that the patient cannot keep the eyelids raised for a few seconds, but, when aroused, lapses

again into a dreamy sleep, broken by occasional mutterings and slight jerking of the limbs. In either case, the power of maintaining the erect posture will be lost, and at best the patient reels like a drunken man.

"When taken by the mouth, hyoscyamus, or its active principle, produces exactly the same effects. They are fully developed about an hour after the ingestion of the medicine.

"Three ounces of a succus hyoscyami, prepared for me, produced effects equal in degree and duration to one-eighth of a grain of the sulphate of hyoscyamia[1] used subcutaneously. A fluidounce of this succus, or of the common tincture, or fifteen grains of good extract, are about equivalent to the fortieth of a grain of the sulphate introduced by the skin.

"Children will usually bear a very large quantity of henbane. I have frequently given a fluidounce of the succus, or tincture, to children under twelve years old, with no other effects than an acceleration of the pulse thirty or forty beats, continuing for an hour and then gradually declining; and, towards the end of the action, a moderate dilatation of the pupil. The mouth has remained clean and wet throughout; and there has been no trace of giddiness or sleepiness." * * * * * * * * *

"In its action upon the system, hyoscyamus appears to be intermediate between opium and belladonna, possessing as it does, on the one hand, powerful somniferous properties second only to opium itself, and, on the other, an influence upon the sympathetic nervous system, as indicated by the pulse, secondary only when given in larger doses, to that possessed by belladonna itself.

"Compared with belladonna, it is distinguished by a preponderance of deliriant or somniferous properties. Compared with opium, it agrees, on the one hand, very closely with that drug in its cerebral effects, provided we take a wide view of the operation of both medicines upon the system; while, on the other, its influence upon the pulse, upon the mucous membrane of the mouth, and upon the pupil, place it in strong contrast with that drug. In addition to its cerebral and sympathetic effects, henbane has a powerful depressant influence upon the motor function, and thus comes into relationship with conium.

"I have referred the chief effects of belladonna to its stimulant action upon the sympathetic nervous system; and it cannot be doubted, I think, that the more obvious effects of hyoscyamus arise from the same cause; but the stimulant effect of hyoscyamus is, comparatively speaking, of so short a duration, that this action, as indicated by the condition of the urinary secretion, is not very manifest.

"Hyoscyamine, however, like atropia, is eliminated by the kidneys. It may be detected in the urine at any time during the operation of the medicine. I have demonstrated its existence in the urine twenty-two minutes after the injection of one-fifteenth of a grain of hyoscyamine into the skin, and two hours and a half after two ounces of the succus hyoscyami were taken into the stomach. Further, it may readily be isolated from the urine, and identified and distinguished from atropia. The urinary constituents themselves do not appear to undergo any diminution nor increase during the operation of hyoscyamus." * *

"The fact of the passage of hyoscyamine and atropia, in an undecomposed state, through the urinary tract in their passage out of the system, leads me to the consideration of the influence of these medicines upon the bladder and kidney itself. At the end of the operation of belladonna or hyoscyamus, many individuals altogether fail to pass a single drop of urine, and this retention is often prolonged for several hours; but never, when the bladder is in a healthy condition, causing any inconvenience. Sometimes, after prolonged efforts, the patient is able to eject a little urine, a few drops at a time. On three occasions, in adult males, I have been obliged to remove the urine, for the purpose of examination, by means of the catheter; in each case, the No. 11 instrument passed with the utmost facility, and, on withdrawing the stylet, the urine flowed in a sluggish, powerless stream, and there was little or no indication of any contrac-

[1] The sulphate of hyoscyamia used in these investigations was prepared by the lecturer from the seeds of the biennial plant. It was of a light-brown colour, semi-crystalline, and highly deliquescent.

tile power behind it. It is plain, therefore, that the proper sensibility of the mucous surface of the bladder was blunted by the contact of the atropia or hyoscyamine, and thus the natural stimulus to contraction was removed.

"From these facts, we can readily understand the beneficial influence of these medicines upon that irritable condition which keeps the bladder in a constant state of contraction. In all irritable conditions of the kidney, and especially in the oxalic and uric acid diatheses, henbane is invaluable." * * *

"The combined action of hyoscyamus and opium presents some interesting features. Briefly, they are as follows: 1. Opium prolongs and intensifies the effects of hyoscyamus, even to producing an acceleration of the pulse some 15 or 20 beats for an hour or more. 2. Hyoscyamus increases the hypnotic action of opium, and to a certain extent is able to prevent the derangement of the vagus nerve, which is frequently the first effect of opium. 3. Opium, given in combination with hyoscyamus, does not prevent the elimination of hyoscyamia by the kidneys."—*Brit. Med. Journ.*, April 11, 1868.

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11. *Hypodermic Injection of Remedies.*—Dr. ANSTIE (*The Practitioner*, July, 1868) claims the following advantages for the hypodermic over the gastric administration of drugs: 1. Economy of the drug. 2. Entire abolition of the depressing or irritant effects which are locally produced in the alimentary canal during the *digestion* of various remedies. 3. Far greater *permanence of effect*, in many cases, than can be produced by medicine swallowed. 4. Much greater rapidity of action. One most important conclusion from these facts is this: *that anodynes and hypnotics ought never to be administered by the mouth in acute disease attended with anorexia.* Regular and systematic nutrition is the great necessity and the great difficulty in those diseases, and the avoidance of any treatment tending to interfere with digestion of simple food is a cardinal duty.

As to the question of *danger* of this method, he says, that there is *absolutely none* if the injector will remember two cautions—first, that the physiological activity of nearly every substance which can be thus used is *three if not four times greater when it is given by the skin than when it is swallowed;* and secondly, that the liquid injected must not be either markedly acid nor markedly alkaline, nor in any way obviously *irritant to tissue.*

Morphia, Dr. Anstie says, should be used in the form of the acetate, dissolved with a minimum of acetic acid in hot distilled water five grains to the drachm. One minim of this will represent one-twelfth of a grain, a very useful minimum dose in cases of slight neuralgic pain. Two minims ($\frac{1}{6}$ grain) is the best commencing dose for the relief of severe pain, and as a hypnotic in states of nervous irritability. Three minims (or $\frac{1}{4}$ grain) is an *unsafe dose to commence with;* dangerous and even fatal results have been known to follow its use.

The salt used in this manner is at least three times as powerful for every therapeutic purpose as when swallowed, and the majority of the unpleasant symptoms which opiates, when given by the mouth can produce, are entirely absent when administered hypodermically. The fact seems to be, that in the gastric digestion of morphia much of the salt becomes decomposed, and its specific effect on the blood is lost; but during the digestive process it acts depressingly upon the gastric nerves, and *pro tanto* disorders the functions of the stomach.

Atropia is an extremely valuable hypodermic agent for the relief of local pain and spasm. It should be employed in the form of solution of the sulphate; four minims containing $\frac{1}{60}$ grain; two minims will be the proper commencing dose in adults, unless the pain to be relieved is very severe. It should be cautiously increased to $\frac{1}{60}$ or $\frac{1}{50}$ grain; more can seldom be needed, and poisonous effects may be produced if pushed to higher doses. Atropia is incomparably the best of all medicinal remedies for every kind of pain in the pelvic viscera. Nothing can approach it in this respect.

Strychnia, Dr. Anstie has found to be a most valuable remedy in gastralgia. It should be administered in solution, two grains to the ounce of distilled water, and the proper commencing dose is two minims ($\frac{1}{120}$ grain).

MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICE OF MEDICINE.

12. *Nature and Treatment of Pulmonary Consumption as Exemplified in Private Practice.*—This is the title of a paper continued through several recent Nos. of the *Lancet*, by Dr. C. J. B. Williams, who is high authority on this subject, and his son. In his concluding article (Aug. 15, 1868), Dr. W. says that, on taking a retrospect of an experience of forty years in the treatment of consumption, he can trace a remarkable improvement in its success as judged by its results. He ascribes this improvement to the use of cod-liver oil, and expresses his conviction that this agent has done more for the consumptive than all other means put together. "And so far," he says, "is this remedy from having 'had its day and gone out of fashion,' that in my experience its usefulness and efficacy have gone on increasing in proportion to the greater facilities for obtaining it in a pure state, and to the improvements in the manner of administering it, in combination with various tonics, and in connection with certain rules of diet and regimen."

Dr. W. states that the average duration of life in phthisis during his forty years' experience has at least quadrupled, or raised from two to eight years, and that "this is below the actual results as calculated by my son; for of the 500 cases, 380 were still living at the last report, and many of these are likely to live for many years to come."

The treatment which Dr. W. has commonly adopted, is as follows:—

"As we have been led to conclude that consumption is essentially a disease of degeneration and decay, so it may be inferred that the treatment for the most part should be of a sustaining and invigorating character. Not only the most nutritious food, aided by a judicious use of stimulants and of medicinal tonics, but pure air, with such varied and moderate exercise in it as the strength will bear, and the enlivening influence of bright sunshine and agreeable scenery and cheerful society, are among the means best suited to restore the defective functions and structures of frames prone to decay." * * *

It is generally considered that consumption should be treated on a tonic and sustaining plan; and that the nourishment and strength of the system should be supported by varied tonics and cod-liver oil, as well as by the most nutritive articles of diet. But, Dr. W. says, "when the disease is ushered in with symptoms of acute bronchitis or pneumonia, with its attendant fever and scanty disordered secretions, it is obvious that such treatment is wholly unsuited for the occasion; and that remedies of the mild antiphlogistic kind, such as salines, with or without antimony, blisters, and cataplasms, and sometimes even moderate leeching or cupping, will give most relief, and will prepare the patient for the safe administration of the sustaining class of remedies." * * In case of active inflammation, continued heat of skin, hard racking cough (dry, or with viscid and tinged expectoration), much pain or soreness of the chest or side, it answers well to withhold or withdraw the stronger stimulants and tonics, and for a time—it may be a few days only—to substitute cooling and soothing remedies, with moist epithems or counter-irritants on the chest, and, more rarely, local depletion. But this discipline, which is exceptional, should as soon as possible be replaced by what may be called the regular treatment by cod-liver oil and tonics, and a more generous diet. The transition need not be abrupt. So far as regards cod-liver oil, and the mild acid tonics, with which I generally combine it, the change may be made long before the inflammatory complication has subsided. A dose of these may be given after the morning and perhaps after the mid-day meal, whilst still the saline is taken in the evening and night, and whilst blisters or other counter-irritants are in full operation.

"So soon as the nocturnal heat of skin subsides and the cough becomes less urgent, and the urine more free, the salines may be replaced by a mere cough linctus, if that be needed; the counter-irritation moderated, and the tonic, given with the oil, gradually strengthened by the addition of small doses of salicine, quinia, or iron. These two last tonics are of great use where they are well

borne, as their influence in strengthening the muscular system and in improving the condition of the blood is greater than that of any other drug; but their use requires much discretion and watchfulness, for they often increase the lingering or intercurrent inflammations, with their attendant pain, constriction, cough, and viscid expectoration, and not unfrequently they derange the functions of the stomach and bowels. It, therefore, often happens, where the patient cannot be seen frequently, that it is safer to be content with a milder tonic—such as calumba, cascarilla, or chiretta—which may be continued for weeks and months together in conjunction with the oil, than to give those that are more powerful, but which by occasional disturbances may prevent the continuance of the remedy.

"But the great remedy, more essential and more effectual than any other, is the cod-liver oil; and we may well bestow a little consideration on the mode of using it to the best advantage. It is now pretty generally admitted by the profession that the pure, pale oil, simply extracted from the fresh, healthy livers of the fish, is that most suitable for the majority of patients, as being less unpalatable and at least as efficacious as the impure kind." * * *

"Cod-liver oil, when taken into the system in sufficient quantities, and for a sufficient length of time, acts as a nutrient, not only adding to the fat of the body, but also promoting the healthy growth of other tissues, and in some way, as an alterative, counteracting the morbid tendency to the proliferation of the decaying cells of pus, tubercle, and kindred cacoplastic and aplastic matters.

"That its efficacy depends much on its being absorbed freely into the blood, and through the circulation pervading all parts of the body, and thus reaching to the very seat of morbid deposits and formations. That the more fluid part of cod-liver oil surpasses all other oils and fats in the facility with which it forms emulsions, which are tolerated by the stomach and readily absorbed into the blood, without causing the nausea and bilious derangement that commonly result from an excess of fat food. This peculiarity may depend on the biliary and other matters contained in the oil, which in other instances of disease is found to act beneficially on the liver and other secreting organs.

"That the best time for the administration of the oil is immediately after, or, to those who prefer it, at or before, a solid meal, with the constituents of which the oil becomes so intimately blended that it forms a part of the chymous mass, and is less likely to rise by eructation than when the oil is taken into an empty stomach. From this chymous mass, the oil being absorbed through the lacteals with the chyle, is less apt to disorder the liver than if absorbed through the veins of an empty stomach.

"That as the use of the oil should be continued for a long time—perhaps for months, or even years—it is of great importance to conciliate both the palate and the stomach by giving it in a vehicle which may agreeably disguise its flavour and strengthen the stomach to bear it. For this purpose an aromatic bitter, such as the compound infusion of orange-peel, acidulated with a mineral acid, both to help to cover the taste of the oil and also to suit the stomach, which should be duly supplied with acid during digestion, generally answers well. Syrup may be added according to the taste of the patient; or, still better, some bitter tincture, such as calumba, cascarilla, or quinia, in every case in which it is desirable to improve appetite and tone. In cases of peculiar weakness of stomach, with tendency to retching or nausea, strychnia, in a dose of from $\frac{1}{32}$ to $\frac{1}{64}$ of a grain, proves a most valuable adjunct to the vehicle. By its means I frequently overcome the fastidiousness of stomach arising from debility, hysteria, or indulgence in alcoholic liquors. Salicine is another efficacious alternative of the same kind. Either of these, although a powerful tonic, has none of the heating properties of quinia or iron. When the strong bitter taste is objected to, a pill, containing extract of hop or chamomile, or salicine, or quinia, may be taken after, or before, the oil and its vehicle.

"The bulk of the whole dose of oil and vehicle should be small, so that it may be swallowed at a single draught; therefore the vehicle should not exceed a tablespoonful, with, at first, a teaspoonful of oil, to be gradually increased to a tablespoonful. The dose of oil should rarely exceed a tablespoonful twice or thrice daily: when a larger amount is taken at a time, generally either it deranges the stomach or liver, or some of it passes unabsorbed by the bowels.

"The acid may be varied according to circumstances. The nitric generally suits best in inflammatory cases, and those attended with much lithic deposit in the urine; but its tendency to injure the teeth is an objection to its long continuance. The sulphuric is more eligible where there is liability to hæmoptysis, profuse sweats, or diarrhœa. But in most cases, and for long continuance, I have found reason to prefer the diluted phosphoric acid, which may be termed the most physiological of the acids, tending to derange the chemistry of the body less than the others.

"With some individuals the oil agrees so well, and so much improves their digestive powers, that they require few or no restrictions in diet; but this is not the case with the majority. The richness of the oil does prove more or less a trial, sooner or later, to most persons; and to diminish this trial as much as possible, it obviously becomes proper to omit or reduce all other rich and greasy articles of food. All pastry, fat meat, rich stuffing, and the like, should be avoided; and great moderation observed in the use of butter, cream, and very sweet things. Even new milk in any quantity is not generally borne well during a course of oil; and many find malt liquor too heavy, increasing the tendency to bilious attacks. A plain nutritious diet of bread, fresh meat, poultry, game, with a fair proportion of vegetables, and a little fruit, and only a moderate quantity of liquid at the earlier meals, commonly agrees best, and facilitates the continued exhibition of the oil in doses sufficient to produce its salutary influence on the system.

"In case of a bilious attack coming on, indicated by nausea, headache, furred tongue, offensive eructations, high-coloured urine, and sometimes pain and tenderness of the right hypochondrium, it is necessary to suspend the oil, lighten the diet of the patient, and give blue pill or calomel with an aperient on alternate nights, and an effervescing saline two or three times during the day. A few days of this treatment will generally set the stomach and liver to rights, and the oil may be resumed, beginning with small doses as at first. In all cases during the use of the oil the bowels should be kept regular in action; and if this cannot be done by regularity of habit and diet, it should be effected by the use of a mild daily pill of rhubarb or aloes." * * * *

"Although my long experience assigns to cod-liver oil a place far above all other remedies in the treatment of pulmonary consumption and its allied maladies, it has taught me to believe also in the limited efficacy of certain other agents, and it would not be fair to pass these over in this brief summary of treatment.

A combination of iodide of potassium and nitric acid with a vegetable tonic, Dr. W. says, has distinctly wrought some good in consumptive cases before the pure oil was introduced. He still sometimes uses this medicine in the rare cases in which cod-liver oil disagrees or cannot be taken, and thinks that it is improved by the addition of a drachm or two of pure glycerine to each dose. Glycerine by itself is of little use, but it is valuable as a lubricant, and to sheathe the acrimony of mineral acids and other pungent medicines.

"The hypophosphites of soda and lime, so strongly recommended by Dr. Churchill, of Paris, have in my hands proved decidedly beneficial in certain cases. They have been tried by Drs. Quain and Cotton, at the Brompton Hospital, with only negative results; but having met with several patients who distinctly ascribed their improvement to Dr. Churchill's treatment, I have thought it right to try them myself, both as a substitute for the oil and in addition to it. In the former way the results have not been generally satisfactory: the hypophosphite does not disagree, but there is no marked improvement as under the oil; and when they have been doing well under the oil, the patients generally lose flesh and strength when the hypophosphite is substituted for it. On the other hand, it has happened to me in several cases that a patient has long been taking the oil, and, after having derived great benefit from it, halts in his improvement, or even loses ground, and then the addition of the hypophosphite has been followed by a marked change for the better; flesh and strength have been gained, and the chest symptoms have been more or less improved. In these cases I have merely added four or five grains of the hypophosphite to the vehicle in which the oil is given, always selecting the phosphoric as the acid,

and generally substituting glycerine for the usual syrup. Such precautions are necessary, because the hypophosphites are very unstable in composition; the addition of nitric acid, or mere exposure of the solution to the air (if not guarded with glycerine or a good deal of syrup), being sufficient to convert them into inert phosphates. In my mixture of the hypophosphite with phosphoric acid, I presume the hypophosphorous acid is set free, and is the active agent in the compound. How it acts is quite uncertain. * * *

"Perhaps the efficacy of the sulphurous acid—Dr. Dewar's remedy for consumption—may depend on an influence not altogether unlike that of the hypophosphites. My experience of the use of the spray of sulphurous acid is limited in phthisis, and as far as it has gone has not been very encouraging. But I have found the spray a most useful and agreeable remedy in various affections of the throat, whether diphtheritic or aphthous; and it has proved cleansing and soothing in some cases of foul ulceration of the throat, affecting both larynx and fauces, generally syphilitic in origin, and sometimes ending in pulmonary consumption.

"In connection with this subject, I most notice remedies administered by inhalation, which are really useful in certain cases, chiefly those in which the larynx and trachea are much affected, and in those attended with convulsive cough or offensive expectoration. I have generally found the use of inhaling instruments fatiguing and unnecessary. A quart jug of hot water, with a napkin from over the nose down to and around the jug to confine the steam, is all that is needed. To the hot water is added the drug to be inhaled; and creasote or carbolic acid, iodine, chloroform, oil of turpentine, and juice or extract of hemlock, are the articles which I have found most beneficial. A few drops of one, or of several of these combined, being put into the hot water, the inhalation is practised through both mouth and nostrils without restraint or difficulty, and may be continued for five or ten minutes every night, and, if need be, repeated once or twice in the day. Although the chief operation of this medicated vapour is on the guttural and bronchial surface, yet a portion penetrates into the lungs, and is absorbed into the system; for iodine and oil of turpentine can be detected in the urine within a few minutes of the inhalation being made. Still, although proving very serviceable in certain cases, I cannot rank inhalation higher than as a subordinate remedy in the treatment of consumption. I may add, that the practice of painting the chest with tincture of iodine every night, as a gentle counter-irritant, is not without a certain influence in the way of inhalation; for a portion of the iodine evaporates, and slightly impregnates the air around the patient, and this atmosphere of iodine may not be without its influence for good." * * * *

"Of far more importance in the treatment of consumption is change of air and climate. It is of the greatest consequence to the phthisical invalid that he should breathe as pure an air as possible, and that the influence of this pure air on the blood and on the body should be increased by such gentle and varied exercise in it as his strength and the condition of his organs will permit. This is the great object of our sending him to a warm climate in winter, and to a high and dry locality in the summer, that he may be as much as possible in the *open air*, with its exhilarating and vivifying accessories of light, purity, and freshness, without the chilling operation of cold and wet in the winter, and the enervating and exhausting influence of oppressive heat in the summer." * *

In conclusion, Dr. W. states "that, powerless as medicine is in the overwhelming and rapid types of pulmonary consumption, it has yet considerable influence over the milder forms; and *that under careful treatment life may be prolonged for many years in comfort and usefulness, and in not very few cases the disease is so permanently arrested that it may be called* CURED."

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13. *Use of Ether and Etherized Cod-liver Oil in the Treatment of Phthisis.*—Dr. B. W. FOSTER, in a paper read before the British Medical Association, at its recent meeting, referred to the great difficulty of digesting fatty food which distinguished the great majority of phthisical patients and stated that this defective assimilating power has hitherto been treated by incorrect or insufficient means. The only true method of treatment, he thinks, to be adopted in

such cases, should be directed to the organs whose secretions are at fault. Physiology teaches that the digestion of fat is specially performed by the secretion of the pancreas and the glands of small intestine. Dr. Foster had long sought for a means of influencing these glands, and at last had found most ample evidence in the works of Claude Bernard, that ether is capable of augmenting the pancreatic secretions to almost any degree. Bernard was accustomed, in his experiments, to give ether to animals, in order to obtain a good flow of pancreatic juice. Applying this discovery to the treatment of phthisis, Dr. Foster had met with most satisfactory results. The ether was given as a mixture sometimes, but generally in the form of etherized cod-liver oil. Of the patients treated, and all observed over some months, some over two years, 42 per cent. improved under treatment, 30 per cent. remained stationary, and only 28 per cent. became worse; 12 per cent. of the cases treated presented all the evidence of the arrest of the disease. In no case were the symptoms and physical signs alone accepted as evidence of improvement, every case was weighed from week to week while under observation, and only a decided increase of weight in addition to other signs received as evidence.—*British Medical Journal*, Aug. 8, 1868.

14. *Etiology of Phthisis.*—Dr. P. Eade, of Norwich, in a paper read before the British Medical Association, endeavoured to show that tubercle was essentially but an expression of feeble vitality and exhausted nerve-power, permitting the occurrence of an ill-regulated or unrestrained cell-growth or development. Cells (he said), more or less simple, were the original and lowest form in which animal life was presented. Higher animal structures were formed of such cells elaborated under the influence of more highly developed nervous centres. Any defect of these centres would tend to allow the body to be formed of less highly organized and vitalized tissues with a constant tendency to revert to their original form of cells. The subjects of congenital tuberculosis were feebly and flabbily formed, and their tissues had a constant tendency to disintegrate (proneness to ulceration), and to develop new cell-structures (in lymphatic glands and as purulent discharges). The actual invasion of disease in tuberculously cachectic individuals was due to exhaustion of the nerve-force of the part affected. In acquired tuberculosis (which was chiefly of the lungs) a similar exhaustion of the peripheral nervous twigs was produced, either directly or more commonly by a reflex action from the surface. The part was thus at once reduced to a lower condition of life, and cell growth was allowed to begin, either in spots as miliary tubercle, or in parts as tubercular consolidations. The cells were of feeble vitality, and hence tended rapidly to degenerate. They were possibly capable of reproduction. A close affinity existed between the cause of inflammation and tuberculization of the lungs, the difference being that in the one case the effect produced was sudden or extensive and the patient healthy; in the other the effect was produced more slowly and the patient was congenitally cachectic or temporarily lowered in nervous tone.—*British Medical Journal*, Aug. 8, 1868.

15. *Thermometry of Enteric Fever.*—The number of the *Edinburgh Medical Journal* for August last contains an interesting paper on this subject by Dr. T. J. Maclagan. He states that the chief feature in the thermometry of this disease, as has already been observed, is the tendency which the temperature shows to fall in the morning and rise in the evening. This characteristic is more marked at some stages of the disease than at others; but, in cases tending to a favourable termination, is never altogether wanting, and at the commencement of defervescence becomes so exaggerated as to be quite a distinguishing feature of the disease.

To illustrate this characteristic range as well as its practical utility in diagnosis, prognosis, and treatment, he relates six cases.

The following is a brief summary of the facts he has observed:—

"1. The main feature in the thermometry of a typical case of enteric fever is a marked tendency to a morning fall and evening rise, which during defervescence is so great as to be characteristic of the disease.

"2. The temperature during the continuance of the febrile state, however, does not enable us to distinguish enteric from other forms of fever.

"3. In cases resembling, and apt to be mistaken for, typhus, the evidence given by the thermometer is uncertain and not equal in value to that got from other sources, especially the condition of the eyes.

"4. In cases which throughout have been doubtful, it often gives during defervescence the only certain testimony as to the nature of the malady.

"5. When head-symptoms are severe, and death is threatened by coma, the range of the temperature is generally high and irregular; but the more rapid onset of the head-symptoms in such cases does not permit of the thermometer giving the same premonitory indications which it often gives in typhus.

"6. Irregularities in the range, absence of the morning fall, and still more a morning temperature which exceeds that of the evening, are indications of severity, and specially so when the range is at the same time high.

"7. A fall of the morning temperature at the end of the 2d week, and a subsequent range during the 3d, lower than that which existed during the 2d, are favourable signs.

"8. The highest range occurs in cases which present marked head-symptoms.

"9. Inflammatory affections springing up during the course of the disease have an elevating tendency.

"10. Hemorrhages and diarrhœa have, when profuse, a lowering tendency.

"11. A fall of the morning range is generally the first sign of commencing defervescence.

"12. Elevation of the temperature is one of the earliest indications of a relapse."

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16. *Typhoid Cutaneous Spots.*—ZULCHAUR (*Berliner Klin. Wochenschr.* 1868, No. 12) describes the occurrence, in conjunction with an unusually copious roseolar eruption, of another one of a yellowish-brown colour of the size of a two-dollar piece and over. The latter spots run into one another. They occur very early, soon after the first chill. They were only observed in very severe cases, which in the first, or in the commencement of the second seven days' period, terminate in death.—*Centralblatt f. d. Medicinisc. Wissenschaf.*, 1868, No. 24. D. F. C.

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17. *Pathology and Treatment of Sunstroke.*—Dr. GEO. JOHNSON considers that this affection might be more correctly designated as *heat-apnœa*, and he offers (*Brit. Med. Journ.*, Aug. 1, 1868) the following physiological explanation why the super-heating of the blood which precedes and accompanies this disease has a depressing, and not a stimulating, effect on the nervous centres.

"The hot blood relaxes the muscular walls of the minute pulmonary arteries. The pulmonary capillaries are consequently flooded with blood. This overfulness of the capillaries interferes with the aëration of the blood. In fact, the overgorged vessels must encroach upon the pulmonary vesicles, and so diminish the air-space within the lungs, while the air itself is highly rarefied. Hence a state of more or less complete apnœa. Unaërated blood is sent to the muscular tissue of the heart, and to the brain; hence the cardiac and the cerebral symptoms. A similarly engorged state of the cutaneous capillaries, consequent upon extreme relaxation of the minute arteries, is the probable cause of the dryness of the skin. An excessively engorged state of the capillaries is as unfavourable for cutaneous secretion as it is for pulmonary respiration. The dry and inactive state of the skin and the want of surface-evaporation tend to elevate still more the temperature of the blood; and the suppressed cutaneous secretion, being diverted to the kidneys, probably alters the quality of the urine, renders it irritating to the bladder, and explains the frequent micturition.

"This explanation of the phenomena is confirmed by the results of treatment. There is now a very general concurrence of opinion that the application of cold to the skin is the most successful remedy. The object to be kept in view is not merely, as it is generally stated, to cool the skin, or to excite the respiratory movements by the stimulus of the douche, but to cool the blood, and thus to restore the contractility of the minute arteries of the lungs. The condition of the pulmonary vessels in this disease is the exact opposite to their state in cholera collapse. In cholera collapse, the minute pulmonary arteries are in a state

of extreme contraction; and, as a consequence, the capillaries are extremely anæmic. In heat-apnœa, the pulmonary arteries are extremely relaxed; and the capillaries, consequently, are excessively engorged. In cholera collapse, external warmth in some degree, but much more rapidly and decidedly a warm injection into the veins, relaxes the arterial spasm, and restores the circulation. In heat-apnœa, on the contrary, the object is to cool down the overheated blood, so to revive the contractile power of the minute pulmonary arteries, to relieve the capillaries from their embarrassing excess of blood, and thus to remove the state of apnœa. A clear apprehension of these physiological principles cannot fail to be of great assistance in practice.

"In the treatment of heat-apnœa, the following appear to be the main points which require attention. The patient should be placed in a recumbent position in the coolest possible place, with a free current of air. The clothes should be removed, and cold water applied to the whole surface; or, if the symptoms be urgent, the clothes should immediately be saturated with cold water, without waiting to remove them. If the respiratory movements be failing and feeble, the cold douche is a powerful excitor; but if the breathing be rapid and laborious, it is better to envelop the body in a wet sheet, and to quicken evaporation and cooling by a fan or a pair of bellows. If the patient can swallow, let him drink iced water freely. Whether he can swallow or not, iced water may from time to time be injected. The marvellous effect of hot venous injections in cholera collapse, and the urgent need for cooling the blood in heat-apnœa, suggest the expediency, in extreme cases, of injecting into a vein the same saline solution as has so frequently been employed in cholera, only injecting it cold instead of hot.

"Dr. Morehead (*Clinical Researches on Diseases in India*) recommends venesection in the early stages of the attack, while Dr. Maclean condemns the practice. A routine practice of venesection would be destructive; but, when symptoms of excessive venous engorgement are present, a cautious venesection would be quite justifiable, and probably beneficial, on the well-known principle of lessening distension of the right side of the heart, and thus increasing its contractile power. When respiration has suddenly and quite recently ceased, artificial respiration by Dr. Silvester's method may possibly restore animation. While symptoms of apnœa continue, however great may be the apparent exhaustion, no alcoholic stimulants are to be given, for the reason that alcohol, as well as anæsthetic vapours and narcotics, impede oxidation of the nervous and other tissues, and therefore increase the risk of death from apnœa. Ammonia may be applied to the nostrils as a stimulant, and, if the patient can swallow, it may be given internally. Ammonia is a powerful diaphoretic, and the restoration of the cutaneous secretion is an important step towards recovery. When the skin becomes cool and moist, of course all cold applications are to be discontinued. To sum up, then—as *hot air* and *hot blood* are the cause of this form of apnœa, so *cold air* and *cold water* are the chief means of cure; all other means are subsidiary to these."

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18. *A Cure for Headache.*—Dr. Geo. Kennion extols (*Brit. Med. Journ.*, June 13, 1868) the efficacy of the bisulphide of carbon in solution as a prompt cure for certain forms of headache.

The application is made as follows: "A small quantity of the solution (about two drachms) is poured upon cotton-wool, with which a small, wide-mouthed, glass-stoppered bottle is half filled. This, of course, absorbs the fluid; and when the remedy has to be used, the mouth of the bottle is to be applied closely (so that none of the volatile vapour may escape) to the temple, or behind the ear, or as near as possible to the seat of pain; and so held for from three to five or six minutes. After it has been applied for a minute or two, a sensation is felt as if several leeches were biting the part; and, after the lapse of two, three, or four minutes more, the smarting and pain become rather severe, but subside almost immediately after the removal of the bottle. It is very seldom that any redness of the skin is produced. The effect of the application is generally immediate. It may be reapplied, if necessary, three or four times in the day.

"The class of headaches in which this remedy is chiefly useful is that which may be grouped under the wide term of 'nervous.' Thus neuralgic headache,

periodic headache, hysterical headache, and even many kinds of dyspeptic headache, are almost invariably relieved by it; and, although the relief of a symptom is a very different affair, of course, from the removal of its cause, yet no one who has witnessed (and who of us has not seen?) the agony and distress occasioned by severe and repeated headache, but must rejoice in having the power of affording relief in so prompt and simple a manner."

19. *On the Pathology and Therapeutics of Disorders of the Nervous System, accompanied with Excess of Motility.*—Dr. STRANGE, of Worcester, classes under this title chorea, hysteria, epilepsy, paralysis-agitans, mimosa, and some forms of insanity. His object was to show, by a minute examination of the special symptoms of each, as well as from the general symptoms common to the whole group, that there was a family relationship between them all, and that their pathology must be looked for in the difference in the parts of the nervous system, rather than in any essential distinction between the morbid processes in each. Excess of motility showing a diminution rather than an excess of the nervous force, the treatment in all these disorders will be substantially the same; namely, by such means as should, 1st, improve the quality of the blood; and 2d, by presenting material easily assimilable by the nervous tissue. He had found the most rapid cures from the administration of alcohol, as food to the vesicular neurine, in frequent small doses (six to eighteen ounces daily), in chorea, hysteria, mimosa, etc., in conjunction, in some cases, with cod-liver oil, and from large doses of bromide of potassium in epilepsy.—*Proceedings of British Medical Association*, in *Brit. Med. Journ.*, Aug. 8, 1868.

20. *On some Forms of Visceral Neuralgia.*—Dr. ANSTIE, in a paper read before the Brit. Med. Assoc., discussed the subject of, 1, of neuralgia of the heart; 2, of the ovary and uterus.

1. Under the heading of cardiac neuralgia the author included every variety of the affection commonly known as angina pectoris. He endeavoured to show that, whatever the amount of organic change present in the heart or vessels, the essential feature of the disease, and that which constitutes its interest and its danger to life, is the element of neuralgic pain; or rather, that condition of the nervous system of which that pain is the prominent expression. So far is angina from being always, or nearly always, a rapidly fatal disease, that the author is convinced, from his own experience and from the study of recorded cases, that in the great majority of instances, this affection runs a decidedly chronic course, with intermissions, which completely characterize the neurotic origin of the disorder. In support of this position three series of facts were adduced. The first series included the narration of striking cases in which the anginal spasms recurred during fifteen or twenty years, and death at last took place, not from heart-spasm or heart-palsy, but from degenerative disease of the nervous centres. The second series of facts was concerned with the evidently close relations between angina and the ordinary neuralgias (as shown by the frequent occurrence of the latter in anginal patients), and with the intimate connection evidently existing between spasmodic asthma and angina pectoris. The third series of considerations included the arguments from hereditary taint, and these are, perhaps, the strongest of all. Not only is an angina itself frequently a direct inheritance (as in the celebrated case of Dr. Arnold, whose father had died exactly as he did), but the most ordinary care in inquiring about pain by history will not fail to produce a striking effect on the physician's mind by showing the extraordinary frequency—one might almost say universality—with which anginal patients will be found to have descended from a race strongly marked by tendencies to the more severe neuroses. These positions were illustrated by cases which had come under the author's notice; and the following general conclusions were drawn: 1st. That the essence of angina is a neuralgic condition which (by reflex action on the cardiac motor nerves) may produce either cardiac palsy or cardiac spasm. 2d. That the tendency to this neurotic condition is constitutional, and nearly always congenital. 3d. That the various organic lesions which have from time to time been found in anginal patients acted merely as greater or lesser *provocatives* to the neurotic disorder. The author then discussed in detail the treatment of cardiac neuralgia.

2. As regards uterine and ovarian neuralgia, the author remarked, at the outset, that those affections are distinguished from other neuralgias by the frequency with which *peripheral* sources of irritation are the most important factors of the neuralgic state. Considering the great copiousness of the nervous supply to the uterus and ovaries, and the powerfully disturbing character of the functional processes which are periodically recurring in these organs, we need be at no loss to understand how this should be. The most common variety of perituterine neuralgia is that which attends certain kinds of difficult menstruation. It would not be correct, however, to give the name of neuralgia to the pain suffered in many cases of dysmenorrhœa, in which the suffering is apparently entirely dependent on and commensurate with the amount of obstruction to the escape of menstrual fluid, although its character somewhat resembles the neuralgic type. There is, however, a true neuralgic dysmenorrhœa, the subjects of which have exaggerated sensitiveness of the pelvic organs, and are, besides this, liable to neuralgia of other parts. In the virgin condition they suffer at every period from frightful pain, and this pain is not relieved, or is only most imperfectly relieved, on the occurrence of the flux. These young women, so far from having any mechanical conformation which forebodes sterility, are usually both perfectly apt for conception and child-bearing, and are also evidently benefited by the exercise of these functions. As a contrast to a case which he had related, of dysmenorrhœa from mechanical obstruction, in which marriage was sterile, and the painful periods continued after it, the author related two cases in which frightful neuralgic attacks which had accompanied menstruation in the virgin state diminished after marriage, and soon entirely ceased. This favourable alteration was coincident with an improvement in the general health, and a lessening of the general tendency to neuralgic and other nervous disturbances. The peripheral sources of irritation which give rise to uterine or ovarian neuralgia are not always situated in those organs themselves. Ascarides in the rectum, leucorrhœa of a purely functional nature and proceeding simply from the vagina, calculus of the kidney or ureter, scybalous feces in the rectum, and even the irritation of parts far more distant, may produce pelvic neuralgia in a reflex manner. Even a carious tooth has been known to produce this effect, and its removal to effect an immediate cure. There is, however, one kind of peripheral irritation locally connected with the uterus itself, which is probably one of the most frequent of all exciting causes of uterine and ovarian neuralgia—namely, displacements and flexions of the womb. It has been recently stated by Dr. Graily Hewitt—and the opinion of that high authority was fully confirmed by his (Dr. Anstie's) own much smaller experience—that the great majority, if not all, of the cases which Gooch grouped under the title of "irritable uterus" are really examples of uterine displacement or flexion. The kind of pain which attends these cases, although more or less continuous, is liable to periodical aggravation which assume all the severity of true neuralgia, and this severity is largely commensurate with the sensitiveness of the general nervous system. The author made full reference to the treatment, especially by subcutaneous injection of sedatives.—*Lancet*, Aug. 15, 1868.

21. *Ergot of Rye in the Treatment of Neuralgia.*—The object of this paper, read before the British Medical Association, by Dr. E. Woakes, being to introduce the ergot of rye as a remedy in the treatment of neuralgia, a brief epitome of the writer's views of the pathology of this disease preceded the illustrative cases, this application of the drug being the direct corollary of his theory. Regarding shingles as more or less illustrative of all forms of neuralgia, the author referred the rash, and the pain in it, to the same cause; viz, effusion of liq. sanguinis from the ultimate branches of the artery in the track of which the symptoms appear. Tracing this artery to the skin in one direction, the effusion from a papillary arterial twig was seen to occasion a spot of herpes upon the cuticular surface of the papilla; tracing it in the direction of the corresponding sentient nerve, the fluid effused from the nutrient twigs (vasa nervosum) supplying it was found to occasion, by its mechanical disturbance of the sentient fibrillæ, the severe pain constituting the associated neuralgia. The cause of the effusion in such case was referred to a temporary suspension of the regulating

influence exercised over the minute arteries by the sympathetic nerve-fibres distributed to them. It was this suspended function that the ergot was supposed to restore, and so to allow of the removal of the fluid from its pain-causing situation. Five cases were reported; one of severe neuralgia following shingles, one of sciatica of four months' duration, one of hemicrania, and two of ordinary tic; in all of which cure resulted in from four to six days after commencing with the ergot.—*British Medical Journal*, Aug. 8, 1868.

22. *Zymotic Theory of Disease.*—Dr. FARR, in his recent official report on the cholera epidemic of 1866, sums up his conclusions in regard to the zymotic theory in the following words:—

"It is now held by naturalists that each organ of the body has its proper life; and that it consists of minute centres of action, which have been called cells, globules, organic units, germs, granules, and other names. The cells, like the supposed vesicles of the clouds, are now shown to be solids, and Beale proposes to call them 'germinal matter,' which is perhaps a description rather than a name. 'Monad' would serve to designate these living particles, but as it, as well as the other names proposed, have been already appropriated, these units of force and life may be designated *biads*. Nearly alike under the microscope, *biads* differ infinitely in power and variety; for instance, the brain-cells of man in an early stage of development resemble the pus globules of ordinary inflammation. 'Masses which could not be distinguished from one another [even by Dr. Beale], manifest the most remarkable differences in power.' . . . 'By chemical analysis every kind of germinal matter (*biads*) yields one substance resembling fibrin, another allied to albumen, fatty matter, salts, and water.' Of these *biads* all bodies are built up.

"It is only with particular kinds of these *biads*, then, that we have to do in *zymosis;* and to give definite form to the theory, while *vaccine* lymph may be briefly called *vaccinine*, the granules of Chaveau may be named *vaccinads;* while those of *varioline* (smallpox lymph) are named *variolads;* those of *syphiline*, *syphilads*, and those of *cholerine*, *cholerads*, the choleragenic molecules of Pacini.

"It is life in this low form, where it is developed in isolated particles at war with those which constitute men, that generate zymotic diseases. An epidemic is the war of a conquering host of innumerable particles of life. It is therefore subject to the laws of growth and decay, both in the individual man and in communities."—*Medical Times and Gazette*, August 15, 1868.

23. *The Solubility of False Diphtheritic Membranes.*—The *Journal de Chimie et de Pharmacie* for May contains a short review of the work of MM. BRICHETEAU and ADRIAN on this subject. One of the experiments is of interest: "A false tracheal membrane, weighing about twenty centigrammes, thick, resistant, and representing a square centimetre of surface, was placed in a tub containing about five grammes of water. To this was added two drops of lactic acid; the solution was then agitated. In two minutes the membrane began to disintegrate, and gave signs of dissolving. A few drops more of the acid brought about the complete solution of the membrane. A more complete result was obtained by using lime-water, so as to form lactate of lime. Solutions of potash and soda acted much less powerfully. Bromine water, chlorate of potassa, and common salt were all found less active in promoting solution of the membrane." The authors, therefore, recommend the solution of lactic acid as the best topical application to the false membranes of diphtheria.—*The Practitioner*, July, 1868.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

24. *On the Employment of Physostigma (Calabar Bean) in the Treatment of Tetanus and Chorea.*—Dr. THOMAS R. FRASER says (*The Practitioner*, August, 1868) that "tetanus appears to be, essentially, a disease characterized by an

exaggeration of the reflex action of the central nervous system, resulting in spasmodic contractions. Hence, its most successful treatment seems to have been by the employment of such means as remove the condition of exaggerated reflex excitability, or oppose its manifestation.

Physostigma has the great advantage over all other drugs of directly and powerfully diminishing the reflex activity of the cord. (See number of this Journal for April, 1868, page 502 et seq.)

Dr. Fraser reports eleven cases of tetanus in which physostigma was used, and of these nine recovered and only two died.

Several cases have been recorded where tetanus has followed injuries and surgical operations, and where important nerve lesions have afterwards unmistakably indicated its cause. No great benefit can rationally be looked for in these cases from the employment of any drug.

The extract should always be used. It may be given in the form of pill or of solution in weak spirit of sp. gr. 0.920 (thirty-two grains to the fluidounce).

Dr. F. recommends the treatment to be commenced by subcutaneous injection, and to repeat such injection until the system is decidedly affected, and then to administer the remedy by the mouth, in a dose three times as large as is found necessary by subcutaneous injection. In the more severe cases, however, the subcutaneous injection should be alone employed. For an adult, one-third of a grain of the extract hypodermically will be generally sufficient to commence with. This should be repeated in two hours, when its effects will usually have passed off, and the succeeding doses may be modified according to the experience that will thus be gained. When used by subcutaneous injection, the dose of extract should be mixed with ten or fifteen minims of water. This mixture has always an acid reaction, which is sometimes so decided as to produce slight irritation of the cellular tissue; but this can be avoided by carefully neutralizing the mixture with a solution of carbonate of soda. It will be found necessary to repeat these doses frequently—every hour or every two or three hours—and, of course, the severity of the disease and the effect of the remedy will be the best indications for this. The doses must therefore be continued in increasing quantities until the physiological effect—diminution of reflex excitability—is produced, or until the sedative action of the drug on the circulation is carried to a dangerous extreme, or until constant nausea and vomiting compel us to desist.

As regards the treatment of chorea by physostigma, however promising it may appear, the experience we yet possess is much too limited to allow us to arrive at any decided opinion as to its value.

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25. *Aneurism of Innominate Artery treated by Acupressure of the Carotid and Brachial Arteries.*—Mr. Geo. May communicated the following case to the British Medical Association. J. W., æt. 38, suffered from aneurism of the innominate artery for twelve months. On August 19th, 1867, an aneurism-needle was passed behind the carotid, and the probe behind the brachial, close to the axilla. Arrest of pain and visible pulsation. The needle was removed after seventy-two hours. The pulse recommenced in temporal; ligature of carotid. The probe was removed from the brachial after ninety-six hours. There was return of visible pulsation in the aneurism on the twelfth day. The author made the following deductions: 1. Early period at which collateral circulation becomes established. 2. Importance of securing carotid and subclavian arteries simultaneously. 3. Advantage of acupressure over ligature. The following were the results of the treatment: Partial arrest of growth of aneurism. Patient able to do easy work.—*Brit. Med. Journ.*, Aug. 8, 1868.

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26. *New Operation for Securing the Arteria Innominata and the Subclavian in the First Part of its Course.*—Dr. Hargrave, in a paper read before the Surgical Society of Ireland, proposes the following operation as not only feasible but worthy of testing.

"First, to expose the subclavian in the first part of its course, or the innominata, and to pass the ligature around the vessel, then to saw through the clavicle about its external fourth; my object in encircling the artery with the ligature

before the section of the bone is made, is that we cannot predicate what disturbing influences in the relation of the parts will follow it; they might be considerable or nothing, we guard against any untoward result of such section, by acting as suggested as regards the ligature than tie it. By this proceeding, when the shoulder is deprived of its support by the clavicle it approaches to the thorax; the consequence of which is that the tension of the artery is relaxed, the vessel and the ligature are at rest, not disturbed by any of the motions of the shoulder, and no risk of the vessel being in any way lacerated and giving rise to hemorrhage is obviated. By referring to the dead subject, or in place of it, the anatomical plate representing the course of the subclavian, it will be seen what little support it receives from the surrounding tissues; in fact, it represents a tense full tube, extending from its origin, and resting more or less on the apex of the pleura costalis, till it reaches the first rib, and is not well supported by soft parts till it is escaping from beneath the clavicle into the axillary region. By adopting this plan for securing the subclavian by a single operation, it guarantees, as far as operative surgery can effect, perfect quietude, and less tension to the vessel after the ligature is applied to it. It can be urged against this proposal that the injury to the clavicle is a great objection, complicating it by producing a compound fracture of that bone; it must be borne in mind that this lesion is made in the most cautious and careful manner, admitting that osseous union does not follow it, still the patient will have very great, almost perfect, use of the upper extremity in all its motions.

"One word as to the kind of ligature for large arteries. From my experience of its value on the common iliac artery, no better ligature can be used than that of hemp, *from the firm way in which it remains on the artery, the complete absence of irritation, and no alteration in its strength and soundness.*"—*Medical Press and Circular*, March, 11, 1868.

27. *Popliteal Aneurism.*—The following case was under the care of M. JARJAVAY. A man æt. 40, has had a tumour in the left ham for sixteen months. It increased first slowly, then more rapidly, till, on admission, it was as large as the head of a new-born child. The skin over it was red and inflamed—the knee-joint stiff, the leg swollen, and there was no pulsation in the tibials. He was ordered rest and fomentations. A week after admission, a sudden and severe accession of pain coincided with an enlargement of the tumour. To relieve pain, the patient compressed the artery. Ice was applied. Next day digital compression was begun, and continued at intervals during three days. The impulse was by this much diminished, though not completely stopped. The skin over the tumour began to slough; and, during the next month, the daily details are only of the spread of the sloughing, and the discharge of coagula. Gradually the tumour was emptied, and disappeared; no active hemorrhage appeared; and on January 14, 1868, the patient was discharged cured of his aneurism, though the motions of the limb were considerably impaired.—*Ed. Med. Journal*, Aug. 1868, from *Gazette des Hôpitaux*, No. 9, 1868.

28. *Torsion of Arteries as a Means of Arresting Hemorrhage.*—Mr. T. BRYANT, read before the Royal Med. and Chirurg. Soc., an interesting communication on this subject. He described the two methods by which torsion may be practised, viz., the free and the limited. "In free torsion the end of the artery should be fixed by a pair of clasp forceps, and twisted freely. In 'limited' torsion, the artery, having been drawn out of its sheath, should be fixed transversely about three-quarters of an inch from its divided extremity by a pair of clasp forceps, and held steadily; whilst with a second pair of forceps the free end of the vessel should be twisted freely, as in the former kind. The object of the first pair of forceps being to fix a limit to the twisting of the vessel, and prevent the artery being separated for any distance from its vascular attachments. Three or four complete revolutions of the forceps are enough for small arteries, six or eight for large."

Mr. B. gave the details of a number of experiments made by him on animals, and described the physiolgical conditions of the arteries subjected to torsion.

The following are his conclusions: "1. That hemorrhage may with certainty

be arrested by torsion from even the largest vessels. 2. That it is a safe and judicious practice in all cases in which the vessels are small or of moderate calibre; and that, as far as experiments and practice yet prove, it is equally so in arteries of the first magnitude. 3. That torsion may be 'free' or 'limited,' the free method being applicable to vessels of moderate size, and even to the largest of the extremities, limited torsion being more adapted for the large and loosely-connected vessels. 4. That in torsion, as in the ligature, the permanent hæmostatic processes are alike due to the sealing of the divided inner and middle tunics; but that in the ligature there is only an irregular division of these tunics, whilst in torsion there is a complete division, separation, retraction, and valvular incurvation. 5. That in torsion the twisted cellular coat forms, with the retracted and incurved middle coat, the direct mechanical obstacle to the flow of arterial blood, in the same way as the compressed cellular coat does in the ligature, but that in torsion the twisted cellular coat and incurved middle coat become subsequently a permanent means of occluding the end of the artery, whilst the ligature of necessity becomes subsequently a source of irritation, and too often a means of undoing what has been done by nature's own hæmostatic processes. 6. That in torsion the twist in the cellular coat of an artery, the division and subsequent retraction, incurvation, and adhesion of the middle coat, and the coagulation of the blood in the vessel down to the first branch, are the three points upon which its temporary as well as permanent safety depends, whilst the permanent safety of acupressure rests upon the last point alone, and its temporary effects upon the pressure produced by the needle. 7. That there is every reason to believe that when torsion has been successful on its first application, the fear of subsequent hemorrhage is altogether groundless, for there is nothing, as there is in the ligature, to interfere with the physiological processes set up by nature to occlude the divided vessel, and, unlike acupressure, the temporary obstacle to the flow of blood becomes a permanent one. 8. That upon physiological grounds torsion has decided advantages over the ligature and the acupressure-needle, and that if subsequent experience confirms what has been hitherto observed in the experiments on animals and the application of the practice in the human subject, we shall have gained a point of no mean importance, and simplified surgery in no slight degree. The paper was concluded by the author stating his belief that the practice was a safe and valuable one in many cases, if not in all; that it was not a crude idea, based upon a theory spun out of a fertile imagination, for it had its origin in observation of nature's own processes; that it was based on the well-recognized physiological principles of natural hæmostatics; and that it was artificial only so far as the surgeon's art was employed in rendering these processes most available."—*Lancet*, Aug. 15, 1868.

29. *Torsion of Arteries.*—Dr. G. M. Humphry laid before the British Association the results of his experience of torsion of arteries after operations, as well as the results of experiments on animals, and on the arteries of man and animals after death. For many months he has practised torsion after all operations, including three amputations in the thigh, amputations in the leg, of the breast, excision of the knee, etc. It has answered quite well. There has been no after-hemorrhage in any of the cases; the wounds have healed more quickly, and there has been less pain, than after the ligature. The operation is rather more troublesome, and requires more care and time, than the ligature. He simply seizes the end of the artery with strong forceps, and, holding the forceps in the axis of the vessels, twists till the portion included in the grasp is twisted off and the forceps are quite free. He believes this method to afford the greatest security, and does not recommend the practice of holding the vessel with a second pair of forceps above the part to be twisted. In the case of the smaller vessels, he strongly recommends torsion, as it enables the operator to secure any number without leaving in the wound any foreign substances or excitors of sloughing or suppuration. With regard to larger vessels, such as the femoral, additional experience is required before we can be assured that it is a sufficiently safe substitute for the ligature. In the process of torsion, as observed upon an artery twisted after death, the thick, inner, musculo-elastic coat

is first severed, often as though it had been cut by a knife or ligature. As the torsion goes on, it is so compressed or squeezed by the twisting of the outer coat, that its divided edge is commonly turned up, reflected, into the tube of the artery, to a greater or less extent, as the resistance of the outer coat is more or less prolonged, forming a valvular or funnel-like projection into the vessel. Thus there are the two things—the inversion of the inner coat, and the twisting of the outer. It is upon the latter that reliance is to be placed for resistance to the flow of fluid from the vessel, inasmuch as its pressure causes and maintains the valvular inversion of the inner coat, and, further, by its own strength, offers a direct obstacle to the escape of the blood. This the professor has proved by injecting water, and connecting a column of mercury with the vessel. The fluid first distends the end of the vessel, untwisting it a little, so as to pass through the valvular opening or separated surfaces of the inner coat; then, coming into contact with the outer coat, distends it or unfurls it, or finds an escape through some weak point in its wall. Thus the strength and firm twisting of the outer coat, compressing the inner so as to prevent the passage of blood beyond it, and these withstanding the further escape of the fluid, give the measure of the resistance to the pressure of the column of fluid within the vessel. The amount of this resistance to the pressure of a column of mercury in the same vessel, twisted apparently in the same manner, varies a good deal. Sometimes from ten to twenty inches were borne: at others, not more than three or four. Professor Humphry had been unable to discover the cause of, or to prevent, this uncertainty; and it makes him speak with some hesitation as to the applicability of torsion to vessels of large size. In experimenting on the large arteries of animals, also, he has occasionally found the twisted vessel give way before the wound was closed, requiring it to be twisted again, which was ultimately done with success in every instance. Some improved mode of practising the operation may prevent this. If the vessel is so twisted as not to give way in the first instance, it is, so far as his observation goes, quite secure, and in the later stages even more so than the ligature, there being less liability to the ulcerative suppurative processes which are to some extent necessary attendants upon the ligature Accordingly, the appearances found on examination of the wound, at various periods after the operation in animals, were much in favour of torsion. —*Brit. Med. Journ.*, Aug. 8, 1868.

30. *Amputation of the Right Arm at the Shoulder-joint, and Excision of the Scapula for Severe Injury of the Limb.*—This case, which was communicated to the British Medical Association, at its late meeting, by Mr. V. JACKSON, was that of a man admitted into Wolverhampton General Hospital, December, 1864, having previously been knocked down on the railway by the buffer of an engine, the wheel of which passed over his arm. The injuries were so severe that the removal of the limb at the shoulder-joint, followed by excision of the scapula, offered the only chance of saving life. The author drew particular attention to the fact that the scapula had been excised by sawing through the acromion process, thus saving the point of the shoulder—the first time, in fact, that this had been done, all previous excisions of the entire bone having involved a portion of the clavicle.—*Medical Times and Gazette*, Aug. 15, 1868.

31. *Origin and Treatment of Stone in Boys.*—Mr. THOMAS SMITH refers (*Proceed. Brit. Med. Assoc., Brit. Med. Journ.*, Aug. 8, 1868), the existence of stone in the bladder, for the most part, to defective secretion from certain organs, whereby the kidneys were forced to excrete more than their due share of refuse material; or to disarrangements of the digestive organs, whereby abnormal substances might be formed and added to the urine, or the natural urinary excreta might be formed in excess. He endeavoured to explain the frequency of stone among the children of the poor, and its rarity among those of the rich, and the equal liability of both classes to the disease in adult life. The ordinary and the unusual symptoms of stone were noticed. A case was related where the author had crushed a stone between his finger and a lithotomy-staff, thus relieving the child altogether of his disease. Attention was drawn to the great difference in the mortality of lithotomy, as drawn from general statistics, and as

containing the experience of individual surgeons. As means whereby lithotomy might be facilitated and its mortality lessened, the author recommended that the bladder should be nearly empty at the time of operation; he described a method of manipulating the staff so as to diminish the size of the wound necessary for the extraction of the stone, and recommended the use of very long and slender forceps. The introduction of a canula surrounded by a conical plug of lint immediately after the operation was strongly advocated, and cases were referred to in the author's experience where he believed life had been saved by this means. The paper had appended to it a table of twenty cases of lithotomy in boys.

32. *Results of the Operation for Lithotomy Performed at the Manchester Royal Infirmary from* 1853 *to* 1868.—Mr. Geo. Southam communicates the results of thirty-eight cases of lithotomy operated on by the author at the Manchester Royal Infirmary, all of which were successful except one, the subject of the fatal case being a man in his 79th year, with enlarged prostate; the calculus extracted weighed two ounces; was spiculated, and formed chiefly of oxalate of lime and lithic acid. The ages varied from one year and nine months to seventy-nine years, and the weight of the stones from nine grains to five ounces. The cases were not selected, except that no adult has submitted to the operation where the calculus was supposed to be under the average size, and the urinary organs in a favourable state for lithotrity, of which there were seven. Full details of thirty-two cases were given, eleven of which occurred in adults; in six of these the calculi varied in weight from one and a half to five ounces, and in five from five and a half to seven and a half drachms. Taking into consideration that the most favourable adult cases were reserved for lithotrity, the author considered a mortality of one in thirty-eight proved that lithotomy is not the dangerous operation it is commonly held to be. He did not, however, wish to disparage lithotrity, which he considered the preferable operation, where the bladder-pustule and urethra were in a healthy condition, and the stone of average dimensions, and he generally adopted it in private practice; but where complications occur, and they are not of a nature to contraindicate operative interference, he believed lithotomy afforded the best prospect of preserving the lives of our patients. He pointed out some of the circumstances which he considered had contributed to the successful results in his cases. After alluding to the importance of preparatory treatment, several suggestions for facilitating the different stages of the operation were given. He advised free incision through the skin, areolar and adipose tissue, but those into the membranous and prostatic portion of the urethra should be very limited, the elasticity of the neck of the bladder in children and early manhood admitting of its free dilatation. To obviate the difficulty which sometimes occurs in reaching the urethra, he advised the direction of the knife to be altered according to the age of the patient. The pelvis of the child being smaller and placed more obliquely on the spine than in the adult, the bladder is almost an abdominal organ in early life, sinking into the pelvic cavity as this increases in capacity. Therefore, to find the urethra readily in children, the point of the knife should be directed obliquely upwards in a line with the inner border of the arch of the pubes; whilst in the adult it should be kept more horizontal. Additional facility in this stage of the operation is afforded by allowing the nail of the fore-finger to grow longer than usual, which, passing more readily into the groove of the staff, becomes an excellent director for the point of the knife. Especial attention was paid to the prevention of the injurious effects of shock. Immediately the operations were completed, the patients were enveloped in a warm blanket, and on being placed in bed, bottles filled with hot water were applied to the feet and other parts of the body, until the signs of reaction set in. In the after-treatment, the patients were allowed nutritious food as soon as the stomach was in a fit state to receive it. The paper was illustrated by drawings, and the calculi extracted were exhibited.—*Brit. Med. Journ.*, Aug. 8, 1868.

33. *Tracheotomy in Croup.*—In the 1st No. for 1868, of the *Jahrbuch der Kinderheilkunde*, Professor Steiner presents us with an abstract of his expe-

rience in regard to the results of the operation of tracheotomy in croup. In the course of four years the operation was resorted to in 52 children—33 boys, 19 girls—affected with the disease. In 18 of these—11 boys, 7 girls, or 34.6 per cent.—with a favourable result. In the 34 unfavourable cases, 35 presented a croupal affection of the larynx, trachea, and bronchi, the effusion being either tubular, membraniform, or in isolated patches. In many instances the effusion was, in great part, of a soft puruloid character. In one case the trachea and bronchi were filled with an ichorous matter, while the croupose excretion was found in the larynx. In one instance congestion of the bronchi was met with, in a boy who died forty-nine days after tracheotomy. There was regularly pulmonary emphysema; in five cases there was croupose pneumonia; in six, croupose lobular pneumonia; in one case gangrene; in six cases pleural adhesions were present; in two cases ecchymosis of the visceral pleura. The brain was almost invariably congested, while the solitary follicles of the small intestines were in a state of evident intumescence, whether as a concomitant of the disease, as an effect of the emetics administered, or a product of acute inanition. In three cases, besides disease of the throat and larynx, there was not present any other apparent lesion, death being attributable to a morbid change in the crasis of the blood. In two cases of death three weeks after tracheotomy, there was, besides excessive anæmia, no other lesion that could be detected; the mucous membrane of the larynx and bronchi was entirely normal. In two cases there was cholera from gastro-enteritis—that is, the epithelium of the mucous membrane of the small intestines was in a state of general desquamation—the epithelium itself very much clouded, and beset with molecules and drops of fat. In one case of a four year old boy, death from hemorrhage occurred on the seventeenth day after the operation. The blood proceeded from an ulceration of the middle lobe of the thyroid gland, with loss of substance of the mucous membrane of the trachea, corresponding with the lower side of the canula. In one case the fatal event was attributable to the coincidence of hooping-cough and chronic hydrocephalus. During the first five years of life the mortality of croup after tracheotomy was the highest. Of thirty-one cases operated on at this period, twenty-five died. The first three years after the operation proved the most critical. The cure is to be dated from the time when the use of the canula can be definitely disposed of. There was a liability for the cure to be retarded or prevented by a chronic swelling of the laryngeal mucous membrane, a remnant of the croupose inflammation; ulceration as a result of laryngeal croup; contraction, from cicatrization, of the mucous membrane of the larynx; paralysis of the glottis; luxuriant granulations formed at the edges of the incision in the trachea, which form a tongue-shaped projection within the respiratory tube; infiltration of the skin and cellular tissue, with change of substance in the immediate neighbourhood of the artificial opening into the trachea. Bronchial croup may be protracted to a chronic stage by the freedom and normal functions becoming, at short intervals, restored and again interrupted. In such cases the bronchial disease may outlast for many weeks the laryngeal croup. The canula was withdrawn in four cases on the 28th day; in three cases on the 20th; in two cases on the 10th; in two on the 21st; in two on the 25th; and one on the 17th, 30th, 34th, and 35th days respectively; in one case not until fifteen months after the operation. Tracheotomy, according to Prof. Steiner, is the most successful when not too long postponed. It should be resorted to so soon as emetics cease to afford relief, or emesis can no longer be produced; or when no longer remissions occur between the croupal paroxysms. As to the part at which the opening into the respiratory tube should be made, this must in each case be left to the judgment of the practitioner. In the Prague Hospital for Children, the operation is usually performed low down in the trachea. It should be done without the use of an anæsthetic. A double canula, of as large a calibre as possible, and of a sufficient length, is to be immediately after the incision is made, introduced through it into the trachea, and kept there so long as the croupal inflammation continues. The treatment subsequent to the operation is of great importance to insure a successful result. And it is in consequence of this being more closely and fully attended to in the wards of the hos-

pital than elsewhere, that the operation has been attended with greater success there than in private practice. The air of the patient's chamber should be kept constantly pure by free ventilation, and of a mild, even temperature. Immediately after the operation there should be applied loosely around the patient's neck a cloth wet with water. In cases marked by an inflammatory reaction in the neighbourhood of the incision in the trachea, the wet cloth should be frequently renewed at short intervals. A spoonful or two of wine should be given to the patient after the operation, and he be left to sleep. After awaking he should be given some appropriate nourishment, as milk, meat broth, eggs, easily digested meat, beer, wheat bread, etc. The presence of fever does not contraindicate the use by the patient of appropriate food. The medical treatment must be governed by circumstances. When there is free mucous secretion, with copious expectoration, ipecacuanha alone, or in connection with extr. cort. cinchon. will be indicated. When there is much fever present, infusion of digitalis with nitre, or a few drops of the simple tincture of opium, with cold fomentations to the chest. When there is constant dyspnœa, arnica, liq. ammon., anise, benzoin; when collapse ensues, wine, camphor, musk. When there exists faucial croup, gargles of chloride of potash will be proper; or, in quite young children, the throat should be washed with a solution of nitrate of silver. Both tubes of the tracheal canula must be kept perfectly clean, within and without; and to this end they should be removed and separated at proper intervals. A continued irritative cough often results from ulceration of the tracheal mucous membrane, produced by an accretion upon the portion of the canula within the trachea; when infiltration takes place, followed by loss of substance at the edges of the wound in the windpipe, the proper remedy is the application of portions of charpie, wet with a solution of chloride of potash, half a drachm to one drachm in three to six ounces of water. When gangrene is threatened, the proper remedies are chloride of potash, quinia, acids, and wine.—*Viertel-Jahrschrift f. d. Prak. Heilkunde. Drit*, Bd. 1868. D. F. C.

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34. *Strangulated Hernia in Infants.*—E. W. Wimer (*Ploss. Ztschr. f. Med., etc.*, 1868) has collected the histories of forty-eight cases of strangulated hernia in young children. Three-fourths of the cases occurred in the first and second years of infancy; very few at a later period, as most congenital herniæ become cured before the third year. Nearly all of the herniæ found strangulated in infants were inguinal. The longer the strangulation continued, the more unfavourable the prognosis. Of the forty-eight cases above referred to, twenty-six were operated on, eighteen were reduced by taxis, and three were treated therapeutically. Of those operated on, eight died; of those reduced by taxis, three died; as did also one of those treated therapeutically.—*Centralblatt f. d. Medicinsc. Wissenschtn.*, 1868, May. D. F. C.

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35. *On the Mortality Arising from Abdominal Hernia, with Suggestions for its Diminution.*—Mr. John Birkett, in a paper read before the British Med. Assoc., quoted the returns of the Registrar-General to show that the death-rate from hernia in the London districts averaged 149 per annum; and in England, 826. The causes of death were stated to arise from prostration, peritonitis, and injury of the bowels; and the fatal results could only be averted by reducing the protrusion as quickly as possible by the taxis, and when that failed by operation. He especially deprecated delay and violence in replacing the hernia, both these circumstances producing many deaths annually.—*Brit. Med. Journ.*, Aug. 8, 1868.

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36. *Treatment of Rupture of Ligamentum Patellæ and of Transverse Fracture of Patella.*—M. Sistach is of opinion that position and immobility for a sufficient length of time are quite sufficient to effect a good cure, without any use of the compressive bandages and apparatus so generally used, which are liable to do harm rather than good, preventing the nutrition of the limb, and specially the formation of the new material which is to unite the divided ends of the tendon, causing atrophy of the limb and local scurvy.—*Gazette Méd. de Paris*, No. 11, 1868.

37. *Removal of Cancer by Caustic Arrows and Carbolic Acid.*—Dr. J. R. WOLFE related to the British Association two cases. In the first, there was epithelial cancer in the inner canthus, involving both eyelids, of nine years' standing. Four openings were made around and one in the centre of the tumour, into which were inserted caustic arrows. On the third day the tumour came away; the wound was treated with carbolic acid dressing, at first strong, afterwards diluted, and with the application of carbolized wadding dipped in glycerine; it healed in a fortnight. There was no relapse, and scarcely a trace of a cicatrix remained. The second case was one of cancer of the lower eyelid and cheek, removed in the same way. The patient was discharged in eighteen days. There was no relapse. The advantages of this mode seem to be—1. Little or no pain; no confinement to bed required. 2. Complete extirpation of the diseased part. 3. The gap left granulates freely, without leaving any mark. 4. It is valuable for removing tumours from regions where no skin can be obtained from the neighbourhood, and is also applicable to erectile tumours, nævi, cancer of the breast, etc., occurring in particular persons, places, or seasons of the year, when the use of the knife is to be dreaded. The arrows are prepared by making chloride of zinc into a stiff paste with starch, rolling into shape and drying. Dr. Wolfe showed that obliteration of the lachrymal sac, etc., did not necessarily induce epiphora or any discomfort, referring to the result of his own experiments on rabbits, which proved that the lachrymal gland was by no means the main source of the tears, which continued after the removal of that gland.—*Brit. Med. Journ.*, Aug. 8, 1868.

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38. *Villous Tumour of the Rectum, and the Resemblance it may bear in its Symptoms to Chronic Dysentery.*—Dr. H. M. TUCKWELL communicated to the British Medical Association two cases, the chief clinical interest of which consisted in the remarkable resemblance which they bore in their symptoms to chronic dysentery. Characterized by a sallow cachectic aspect of the patient, by very frequent action of the bowels, with severe tenesmus, by persistent and intense pain in the lower part of the back, and by slimy discharges mixed with blood; they showed how dysentery might be closely simulated by villous tumour of the rectum, that nothing but a most careful examination of the rectum would serve to distinguish the one disease from the other. In both cases the villous growth, of considerable extent and size, occupied the posterior wall and sides of the bowel, reaching from about four inches above the anus into the sigmoid flexure. It was thus quite possible, *unless the rectum was examined directly after an action of the bowels, when, with the violent downward straining present in this disease, the villous processes were forced down within reach of the finger*, to overlook the presence of the tumour. In neither case was there any evidence of obstruction of the bowels, so commonly met with in this form of tumour, to aid in the diagnosis. The immediate cause of death in both instances was perforation of the bowel through the base of the tumour; the opening in the one case leading directly into the peritoneum, and death following from general peritonitis; in the other case just missing the peritoneum, and leading into the connective tissue between the bowel and the sacrum, where a large abscess had formed, which terminated in pyæmia and secondary abscesses in the lungs.—*Brit. Med. Journ.*, Aug. 8, 1868.

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39. *On those Secretions which are, and on those which are not, the Means of Communicating Constitutional Syphilis.*—Mr. HENRY LEE, in a paper read before the British Med. Assoc., related typical cases of two distinct kinds of syphilitic infection, and dwelt upon the test of inoculation as distinguishing the two varieties. It was not every pustule, he observed, which was to be considered the true specific pustule; for he related the case, and showed the drawing, of a well-developed pustule at the expiration of fourteen days, produced by inoculating some simple pus from a case of excision of the knee-joint. Mr. Lee then referred to his original observations on the inoculation of matter from indurated sores. The conclusions at which he had come were that the secretions from indurated sores under irritation were sometimes inoculable; but that the inoculations dif-

fered from those performed from the secretions of suppurating sores. He next referred to the confusion that existed in the writings of those who professed to have given their attention to the subject; and instanced the Report made by the Committee on Venereal Diseases last year to the Secretary of State. After examining sixty-four witnesses, and producing a report extending over upwards of 600 pages, the committee came to the conclusion that no one could tell whether a given local affection would contaminate the system or not. The committee described a local sore which did not infect the system, and a simple sore which did; but they drew no distinction between these two diseases, and the author of the paper thought that it was simply begging the question to say that a sore was local because it did not infect the constitution, and that it did not infect the constitution because it was local. A patient would find out for himself that a sore was syphilitic when he had secondary symptoms; and this was all the committee considered that a medical man could do. Mr. Lee, on the contrary, recognized two distinct kinds of disease, each of which followed its definite laws. There had been no instance, he observed, in which the inoculation of the secretion of the specific pustule, or of the sore which resulted from this, had given rise to constitutional syphilis; and he explained the confusion that had arisen upon this subject by a quotation from Professor Owre, in which it is stated that, in the experiments upon syphilization, no such care was taken in the selection of the matter as would appear from the printed statements, but that both kinds of matter were used indiscriminately. The author's conclusions were: 1. That the infecting form of syphilis is communicated by the secretions of both primary and of secondary syphilitic disease. 2. That the secretion of any other specific disease (including the secretion of specific pustule and the suppurating sore which results from it) has no power of imparting constitutional syphilis. 3. That the natural secretions of glands in syphilitic subjects, when those glands are not themselves specifically diseased, have no power of imparting constitutional syphilis.

As this is a subject of general interest, we append the remarks made by the President of the Section, Mr. Paget: "Mr. Lee's paper seems to me," said he, "to offer a fair explanation of some of those cases in which secondary syphilitic affections have followed, and have appeared to be the consequences of, soft chancre. Such cases have occurred to most surgeons; and yet so rarely in comparison with those in which secondary symptoms follow hard chancre, that they seem insufficient to disprove the law according to which hard chancre or diseases derived from it are the necessary precedents of secondary symptoms, the sole sources of constitutional infection. A law of this kind, if there be one, can have no exceptions. What seem to be such must, if the law exists, be erroneously or incompletely observed facts. And here the incompleteness of the observations in some of the assumed exceptions may have been, as Mr. Lee suggests, that a patient has had a soft chancre at or about the same time as he has been infected from a hard chancre, the virus of which has traversed sound textures, and has produced in them too little change to be observed. It must have occurred to every one seeing many cases of syphilis to meet with patients having secondary or tertiary symptoms, who have nevertheless been unconscious of having ever suffered with primary disease. Such cases are commonly explained away or disbelieved. They may have been instances of infection through textures which were not observably contaminated by the transmission of the infecting material through them. Such a transmission is sometimes observed with the poison of dissections; and although one may doubt much of what some believe respecting the derivation of pus-cells from exuded white blood-cells, yet it is quite certain that pus-cells and others like them may pass through membranes having no visible apertures, and may leave no visible traces of their passage. The doctrine of essential difference between infecting and non-infecting, hard and soft, chancres is in the same position as many others in pathology. We seem to have discovered a general law: the facts in support of it are many; those against it are very few—we are justified in suspecting that these are incompletely or erroneously observed, and are not what they seem to be."—*Lancet*, Aug. 15, 1868.

40. *Arrest of Testicle in the Inguinal Canal.*—In the Prague *Quarterly Journ. of Pract. Medicine*, No. XXXV., 1868, Dr. SZYMANOWSKI treats of this accident, and recommends, in cases of retention of the testicle, after every chance of a spontaneous descent has been afforded, to resort to an operation somewhat similar to that proper in the case of strangulated inguinal hernia. The operation is, as Baum has shown, entirely without danger. Of the twenty-two cases of operation collected by Dr. S., but one death is recorded. and that not as a direct result of the operation, but of intercurrent erysipelas. It is important that an operation in cases of arrest of testicle, should not be resorted to too early, inasmuch as cases occasionally occur where the testicle, after remaining arrested for some time at the groin, finally descends into the scrotum; neither should the operation be delayed when the occurrence of severe disease is threatened. Especially is a prompt extirpation of the testicle demanded when a morbid condition of the organ is apprehended. D. F. C.

OPHTHALMOLOGY.

41. *Sulphate of Soda as a Means of removing Opacities of the Cornea.*—Mr. HENRY POWER reports (*The Practitioner*, September, 1868) favourably of the efficacy of the sulphate of soda for removing the curable forms of opacity of the cornea. It is well known that while superficial opacities, the result of recent inflammation, especially in children will often disappear through the influence of the natural powers; while those opacities produced by burns or caustics, or which are the result of perforating ulcers with adhesion of the iris are permanent. In those forms of diffused haziness resulting from hypertrophy of the corneal epithelium or where the spaces between the lamellæ are enlarged and filled with nuclei and imperfectly formed cells, proceeding from the proliferation of the ordinary corpuscles, after the inflammation has subsided, local stimulants may be useful.

Dr. P. says that not more than one or two grains of the sulphate of soda should be applied to the eye at any one time, and that the most convenient mode of application is to invert the upper lid and brush the powders lightly over the surface with a camel's-hair brush. This may be repeated daily, or on every second or third day, according to the degree of reaction which follows. The immediate effect is, he says, to produce a considerable degree of redness and sharp smarting pain, with lachrymation, lasting half an hour or more. In some cases the reaction is too violent, in which case the salt may be mixed with a little starch, or it may be applied in solution, five grains to four ounces of water.

42. *Hypodermic Injection of Atropia in Threatening Glaucoma.*—A special hypodermic application of atropia which appears to promise the most valuable result, is its use in painful iritis, and especially in threatening glaucoma. Dr. Anstie firmly believes that in two cases he has succeeded in preventing the latter affection from developing itself; at least the most threatening symptoms were present, and rapidly subsided under the use of $\frac{1}{60}$th grain injections of atropia.—*The Practitioner*, July, 1868.

43. *Remarkable Development of Cysts in the Retina.*—Mr. G. LAWSON exhibited to the Pathological Society, March 3, an eye which he had removed from a patient in the Royal London Ophthalmic Hospital, Moorfields, under the following circumstances: The man had received, fifteen years previously, a penetrating wound in the right eye, which, in the course of twelve months, led to complete loss of vision. Up to last November the blind eye had never caused him any discomfort, when, without any apparent cause, it became inflamed and painful, and in a few weeks the sight of the sound eye was affected by it. As all treatment failed to give relief, he was in January of this year admitted into

the hospital, and Mr. Lawson removed the eye. At the time of his admission the eye was glaucomatous, its tension was greatly increased, and it was very painful. The lens was milky-white and chalky, so that no ophthalmoscopic examination could be made. On making a section of the eye, the optic nerve was seen deeply cupped; the retina was *in situ*, but slightly detached from the choroid, and its outer surface was studded with numerous small cysts (eleven in number), the largest of which were about the size of a small pea.

Mr. HULKE remarked on the great interest of the case. The cysts were not spaces in the connective tissue; they had a wall of their own, and an internal epithelium, as in the iritic cysts he had described.—*Med. Times and Gaz.*, March 21, 1868.

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44. *Fracture of the Nasal Bones and Right Superior Maxilla, with Displacement of the Ball of the Eye.*—VON LANGENBECK relates, in the *Arch. f. Ophthalmolog.*, xiii., the case of an officer of a railroad, who, in consequence of an injury inflicted on him by a locomotive engine, had the bones of his nose entirely crushed in, at the same time a fracture was produced of the orbitary process of the right upper jaw; an opening was made into the right antrum, with laceration of the eyelids and right cheek. The eye had been forced through an opening in the floor of the orbit, of a finger's breadth, into the right antrum, in such a manner that the axis of the eye was directed perpendicularly upwards. By separating, as far as possible, the edges of the fracture in the orbital plate, the globe of the eye was replaced in the orbit with a continuance of the power of vision. After the healing of the wounds in the eyelids, there was an inability to raise the upper one, and, in consequence the sight was interfered with. By two plastic operations this difficulty was removed to a sufficient extent to enable the patient to see with the injured organ. After a time this became attacked with suppurative *keratitis*, with wasting of the entire globe.—*Centralblatt f. d. Medicinisch. Wissenschaft.*, No. 23, 1868. D. F. C.

MIDWIFERY.

45. *Decidua Menstrualis.*—The membrane discharged from the uterus, in certain cases of painful menstruation, according to the investigations of HAUSMANN (*Monatsschr. f. Geburtskunde*, 1–12, 1868), never presents a complete, continuous cast of the cavity of the uterus, but always consists of three or more pieces. These, on their inner surface, present openings corresponding with the orifices of the uterine glands, but are never covered with a continuous epithelium. In common with other observers, he detected, in these cases, the presence of a number of uterine glands, with rounded or spindle-shaped cells, and a few free nuclei, disproportionate to what is met with in the normal condition of the uterine mucous membrane. The external surface of the so-called decidua of menstruation presents layers of loose, open, for the most part, fibrous tissue. Upon it Dr. H. has seldom observed the free bulbous terminations of the uterine glands. A reference to the cases upon record will show, that in no instance has the discharge of the membrane referred to occurred at the end of regular periods of four weeks each, but always at irregular and longer periods, while there is no well authenticated case given of its discharge occurring in a virgin. In addition, Dr. H. remarks, the details of individual cases are given where the patients have escaped the discharge of the so-called decidua and its attendant sufferings only so long as they abstained from sexual intercourse. Dr. H. concludes, therefore, that the membrane in question is in all cases the result of an abortion, occurring during the first weeks of pregnancy.—*Centralblatt f. d. Medicinsch. Wissenschaft.*, No. 20, 1868. D. F. C.

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46. *Obstruction to Delivery Caused by Dorsal Displacement of the Arm.*—Dr. ANGUS MACDONALD read before the Edinburgh Obstetrical Society two cases of

this kind. Sir James Y. Simpson was the first to point out the true nature of these cases, and Dr. Macdonald believes with that eminent practitioner, that such cases are not nearly so rare as is commonly believed. He is also "strongly inclined to believe," with him, "that minor displacements of the arm are very frequently the cause of lesser degrees of obstruction to delivery. On Tuesday eight days (19th May), I was hurriedly sent for by a student to see a patient, a multipara, who had been some ten hours in the second stage of labour, and on my arrival, feeling convinced that the natural efforts would suffice to effect delivery, I merely waited a little till this took place. But as the head was advancing towards the outlet I felt the fingers of the right arm firmly impacted against the left side of the neck between the left ear and shoulder; and on keeping the hand in this position till labour was completed, I found that the right arm was crossed over the upper part of the chest, and the forearm being obliquely impacted betwen the left ear and shoulder, the head and arm engaged in the pelvis at the same time, and thus accounted for the delay.

"Sir James, besides, states that he believes that the occurrence of this accident undetected explains many cases of difficult labour in which no disproportion existed between the head and the pelvis, and wherein the uterine pains were normal, more especially referring to a case of Dr. Campbell's in which he had to perform craniotomy after failing to deliver by forceps.

"As to the difficulty of the accident and the obstruction presented by it, either to delivery by forceps or to natural delivery the two cases I have just read are sufficiently conclusive. I have no hesitation in saying, that if such a case is allowed to go on unaided, judging from the extreme difficulty to cause the head to advance by traction, the patient is sure to die from rupture of the uterus or die undelivered.

"It seems to me also that, so far at least as the child is concerned, to attempt to deliver by forceps is equally objectionable, though not nearly so dangerous to the mother. The accident is, however, exceedingly easily put right if detected in time, and may be effected in either of two ways, viz., by podalic version, as Sir James Y. Simpson and Mr. Jardine Murray effected delivery in the case recorded by them, or by bringing down the arm by the side of the head and converting it into a case of head and arm. This is what Sir James did first in his case, though, to quicken the labour, as his patient was very much exhausted and the pains weak, he had afterwards recourse to podalic version. I consider, that, had it not been that, in my second case, the patient was so much exhausted from hemorrhage, etc., and that the pains were somewhat weak, the labour would have been quickly terminated by the natural expulsive efforts, it was so easily effected by means of forceps. But the difficult point in regard to the obstruction is the diagnosis; the difficulty in this respect is, however, infinitely diminished by the ease with which such manipulations as are necessary can be effected under chloroform—an advantage which is clearly pointed out by its illustrious discoverer. Once the diagnosis is made out, all difficulty is over, and I can recommend no surer means of avoiding mistakes in such and similar cases than a rule of practice recommended to me by Dr. Andrew Inglis, and that is, whenever a case is unnaturally prolonged and you can detect no cause, and the cervix is well dilated, chloroform the patient deeply, and pass the hand all round the head to see that no portion is impacted upon, or projecting unnaturally against, any part of the pelvis.

"I have never failed to regret exceedingly the disastrous result of my first case, and feel certain that the life of that child could have been saved had we only had forethought to suspect that this uncommon lesion was present. But such cases are peculiarly deceiving, they seem so natural in every respect. There seems nothing in such cases to warrant the operation of craniotomy, though this, among other means, has been recommended as the proper treatment."

Dr. Keiller regarded the chloroforming the patient in all doubtful cases "and then introducing the hand to ascertain the true state of matters, was of great importance, and he had long been in the habit of recommending this plan to his students. It is the only method by which an accurate diagnosis can be made. The fact of some obstruction taking place in the progress of labour in

women who had previously been delivered without difficulty should excite suspicion. In such cases as those related by Dr. Macdonald, the child's arm is generally bent at the back of the neck, and there is great difficulty in bringing it down. Dr. K. preferred turning to the forceps in these cases. Delay is fraught with great danger to the mother and child.

Dr. Burn said he had repeatedly met with similar cases, but had never experienced any great difficulty in getting the head through with the forceps. In such cases, he thought the fact of the head receding suddenly after a pain was a good diagnostic sign.—*Edinburgh Medical Journal*, August, 1868.

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47. *Treatment of Puerperal Convulsions.*—Dr. J. G. Swayne comments on the unaccountable disfavour with which depletion, even in this disease, is now regarded by many practitioners. Dr. Swayne related a well-marked case in his own practice, in which the convulsions which had increased after delivery and after all the usual remedies, except chloroform, had been tried, were at once arrested by bleeding. He also cited similar cases occurring in the practice of Dr. Depant, of Paris, and Dr. Dyce, of Aberdeen. In one case related by the former, chloroform had been tried for four hours without avail before bleeding was had recourse to. Lastly he narrated a case from the practice of his brother, Mr. S. H. Swayne, in which bleeding was attended with a like success, and followed by a marked diminution in the quantity of albumen in the urine within a very few hours. Dr. Swayne regards bleeding as the most important remedy of all, especially in these convulsions which have a centric origin.—*Brit. Med. Journ.*, Aug. 8, 1868.

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48. *Asphyxia in a New-born Child, produced by Congenital Struma.*—In the *Monatsschr f. Geburtskunde* (199, 1868), Dr. C. Hecker reports that a woman, 36 years old, labouring under well-marked scrofulous symptoms, gave birth, in her fourth labour, after five and a half hours' suffering, to a strong and heavy (seven pounds in weight) boy, who, after a few strong respiratory movements, suddenly expired. The death was the result of an enormous scrofulous enlargement of the glands situated along the trachea; in consequence of which enlargement the respiratory tube became flattened, and its cavity, to a great extent, obliterated, thus cutting off the access of air to the lungs.—*Centralblatt f. d. Med. Wiss.*, No. 19, 1868.

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49. *Transfusion and a New Mode of Management.*—Dr. J. Braxton Hicks, in a paper read before the British Medical Association, remarked upon the small extent to which transfusion had spread, the various causes of which he then proceeded to consider: 1. The want of success generally, which was accounted for by the impossibility of having the apparatus always at hand, the tendency to postpone the operation till too late, and the difficulty of knowing the exact time at which to operate. 2. The inherent impediments to it from the position of the patient, and the tendency of the blood used to coagulate: this the author considered the most troublesome and dangerous, as a clot might readily be driven into the system. This Dr. Hicks had now overcome by the employment of a solution of phosphate of soda mixed with the blood of the supplier whilst flowing. He had first tried it on the lower animals, and then in three cases in the human female during delivery. It had simplified the operation to a great extent. The solution is well known to be tolerated by the system.—*Brit. Med. Journ.*, Aug. 8, 1868.

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50. *Treatment of Versions and Flexions of the Uterus.*—Dr. Graily Hewitt described, at the late meeting of the British Medical Association, the various methods of treatment he had employed, and exhibited a complete series of instruments devised for carrying out the objects in view. The principle insisted on was the preservation of the vagina in its proper position, and making this the fixed point from which to operate on the uterus. In the first place was exhibited a series of eight oval rings of various sizes for the treatment of retroflexion of the uterus, also available for prolapsus. The rings were of copper wire covered with gutta-percha. They were modifications of Hodges' pessary.

In the next place, he showed a stem pessary of peculiar construction, intended for chronic and more difficult cases of retroflexion. For the treatment of anteflexion and anteversion a series of pessaries of novel construction were shown, termed by Dr. Hewitt "cradle" pessaries, and designed to support the fundus uteri by means of two crutch-shaped projecting portions. The pessary was a ring bent into the necessary shape, and of various sizes. This pessary the author had used with uniform success for a period of two years, and stated that by its means the uterus could be held in almost any required position when inclined forwards abnormally. He had found it a most valuable invention, and it had been the means of relieving patients of most distressing and troublesome symptoms. Next were exhibited a series of stem ebonite pessaries, to be worn in the cervical canal. These were retained there by a ring; and the two parts were connected by a simple arrangement. These were used in cases of anteflexion where the flexion was troublesome and chronic.—*Brit. Med. Journ.*, Aug. 8, 1868.

51. *Local Use of Perchloride of Iron in Uterine Affections.*—The objection to perchloride of iron as a topical application in diseases of the womb and uterine passages is, that this salt, unless very much diluted, corrodes the epithelium of the mucous membrane lining the vagina. To prevent this corrosive action, which is caused by the presence of free hydrochloric acid, Dr. BRAUN adds carbonate of soda to a solution of the perchloride of iron, and converts the latter into a neutral salt. For this purpose, the addition of four grains of crystallized carbonate of soda to one ounce of the liquor ferri perchloridi will generally suffice. Chloride of sodium is formed; but the hæmostatic properties of the perchloride are, Dr. Braun states, intensified rather than diminished by the alteration. Dr. Braun has used concentrated solutions of the perchloride treated as above, in various affections of the uterus, and with very good results. In cases of endometritis, hemorrhagia, and of bleeding from small fibrous tumours, he dilates the cervix uteri by sponge-tents, and injects a small quantity of the liquor ferri into the cavity by means of the uterine syringe. For puerperal metrosepsis and putrid vaginal discharges, from one-half to one ounce of the solution is injected by means of an elastic ball fitted to the end of a catheter. To lesions about the os and cervix uteri, Dr. Braun applies balls of compressed cotton-wool completely saturated with a strong solution of the perchloride.—*Brit. Med. Journal*, March 14, 1868, from *Wein. Med. Woch.*, No. 57, 1867.

52. *Treatment of Intra-uterine Polypi.*—Dr. GEORGE H. KIDD observes that we are indebted to Sir James Simpson's application of sponge-tents for the dilatation of the uterus for being able to detect or treat intra-uterine polypi; but sponge-tents, it is shown, are liable to many objections. They become very fetid when they have been a few hours in the uterus; they require prolonged and repeated applications before they open up the canal of the cervix to allow of a complete exploration of the uterus; and they dilate the os externum to an unnecessary degree before they act on the os internum; and their use may give rise to so much irritation as to be attended with fatal consequences. Instead of sponge, Dr. Kidd recommends the use of sea-tangle, with pieces of which, sufficiently long to traverse the whole cavity of the uterus, and of about the size of a No. 5 or 6 bougie, he fills the canal of the cervix as completely as it can be done without using force or causing pain. If the os should be abnormally small, it might be necessary to introduce a single tent for a few hours, as a preparation for more full dilatation; but in general the parts are so relaxed by the hemorrhage from the polypi, that five or six or more pieces can be introduced at the first attempt; and this is found sufficient to permit of a full exploration of the uterus, and the removal of any polypi found in it. For extracting the polypi, the use of a single wire *écraseur* is found the most certain and simple method. The tumour is seized in a vulsellum, guided to it by the finger on the uterus; and then the loop of the *écraseur* is guided to it by the vulsellum, and adapted round its neck by the finger, when tightening the screw divides the attachment of the tumour, allowing it to be extracted along with the vulsellum by which it had been seized. Dr. Kidd stated that he had operated in this way on very

many cases during the last three years, and had always found it safe and efficacious; and he concluded by exhibiting twenty-nine fibrous polpyi that he had removed in this way from the interior of the cavity of the body of the uterus of an unmarried woman aged 56, at four operations; three being removed in the first operation, in September, 1867; nine in the second, in March, 1868; eleven in the third, in May; and six in the following July, when the interior of the uterus was freely painted over with strong nitric acid, with the hope of preventing their further growth; and, for so far, with good effect. The tumours were found, on microscopial examination, to be simply fibrous, differing in this respect from the recurrent fibroid tumours described by West and others; and Dr. Kidd stated that he believed the case to be unique in the annals of medicine.—*Proceedings of Brit. Med. Ass.*, in *Brit. Med. Journ.*, Aug. 8, 1868.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

53. *Toxicological action of Prussic Acid; Atropia as an Antidote.*—M. W. Preyer has arrived at the following most important conclusions from a series of ingenious arguments and experiments. In comparatively moderate, but yet fatally poisonous doses, prussic acid acts by very suddenly and completely depriving the blood of its oxygen. The phenomena being only an exaggerated and intensified representation of what occurs when an animal is made to breathe unmixed hydrogen for some time. Supposing the poisoning to have been accomplished, then, by a comparatively moderate dose, resaturation of the blood with oxygen, if it can be quickly enough accomplished, will infallibly restore the animal to life. On the other hand, prussic acid, given in *very large* doses, paralyzes the heart, and is absolutely fatal. Those cases in which there is apnœa, and the heart is beating, remain open for treatment. M. Preyer was led to believe that the true physiological antidote for prussic acid was an agent which (without producing any other important poisonous effects) would paralyze the peripheral branches of the vagus in the lungs and in the heart; and, on the other hand, stimulate the central nervous apparatus of respiration in such a manner as to produce rapid respirations. He now makes the very important announcement, that sulphate of atropia acts precisely in this way, and he has demonstrated on rabbits and guinea-pigs, that the subcutaneous injection of a very small dose of this agent, if performed pretty quickly after the injection of the prussic acid, is an *unfailing antidote*. Apparently he would recommend the injection of quite small doses ($\frac{1}{75}$th grain?).—*The Practitioner*, August, 1868.

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54. *Poisoning from Eating Bread containing Ergot.*—Dr. Flinzer (*Von Horn's Vjschr. f. Gess. Med.*, viii., 1868) states that the entire family of a farmer, consisting, with his labourers, of over ten persons in all, after partaking of bread containing a large portion, say one-tenth, of ergoted rye, sickened. The symptoms were at first debility, giddiness, and loss of appetite; subsequently were added a feeling of distress, a creeping sensation in the hands and feet, tonic contractions of the extremities, profuse sweating, great thirst, and diarrhœa. A pregnant female was brought to bed five weeks before her proper time. Two of the patients died, but the fact became known too late to allow of an autopsy being made.—*Centralblatt f. d. Medicinisch. Wissenchtn.*, 1868.

D. F. C.

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55. *Experiments with the Poison of the Cobra di Capella.*—Dr. John Shortt, of Madras, has published (*Lancet*, May 2d and 16th), an account of a number of experiments made by him on this poison.

A review of all his experiments leads him to conclude that the effects of the cobra poison observed in mammals and birds are the following:—

"The poison injected having found its way into the circulation, restlessness,

dulness, drooping of the head, and jactitation follow successively. The restlessness and change of position of the animal are constant. The bowels are evacuated, and the urine is passed. The pupils act irregularly, dilating or contracting. Respiration is slow and irregular, at times stertorous, with foam or frothy mucus issuing from the mouth, spasms, and muscular twitching. Reflex action is arrested, as the animal cannot be roused by pricking or pinching the skin. Consciousness and ocular recognition continue to the last in most instances; sensation is retained, though modified; whilst the paralysis is incomplete. The voluntary movements, sometimes after becoming more energetic, soon cease altogether; and the animal may die without the slightest trace of convulsion or tetanic spasms. When the poison has been rapidly absorbed, its effects become apparent more quickly; and the venom is readily absorbed by any living tissue.

The post-mortem examination discovers the right side of the heart to contain some tarry-looking, black, soft clots of blood; and the left side empty. The entire venous system is engorged with the same kind of blood, more especially the large venous trunks. The liver is found hyperæmic, enlarged and dark-coloured.

The first effect of the poison in the system seems to me to damage the current of blood, by the cells of the poison perhaps deranging the vital affinities existing between the blood-corpuscles and the serum in which they float, and by that means the nervous centres are affected and nutrition arrested. On life becoming extinct, the pupils remain permanently dilated, and the blood found in larger vessels, when removed from the body, coagulates within four or five minutes after death. Rigor mortis absent, the limbs remaining supple for hours after life becomes extinct, except only in a few instances, when it occurred in a couple of hours.

HYGIENE.

56. *Air of Hospitals, in reference chiefly to the Presence of Microscopic Germs.*—Mr. LUND, of Manchester, in a paper read before the British Medical Association (*Lancet*, Aug. 15, 1868) detailed some experiments which he had made on the air in one of the surgical wards of the Manchester Royal Infirmary. The ward in which the experiments were conducted contained four beds, and had a cubical capacity of about 5400 feet. A fluidounce of distilled water was placed in a pint stoppered glass bottle, and by removing the stopper, raising the bottle sharply through the air, reclosing and quickly shaking it, the water and the air were intimately mixed; and this process was repeated in all fully 500 times, until the water, previously transparent, had become slightly opalescent. In the deposit thus thrown down, after forty-eight hours, distinct evidences of the presence of organic life were perceptible under the microscope, and on the fifth day there were numerous actively moving vorticelli, with abundance of monads in ceaseless motion. From this it was inferred, if the same experiments were repeated under more varying circumstances, it might be shown that the presence, in the air, of microscopic organic germs was a constant condition easily detectible. The simplicity of the experiment, and the evidence derived from it, attracted much attention.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

On Carbolic Acid in the Treatment of Boils, Whitlows, and Abscesses. By C. J. CLEBORNE, M. D., Surgeon U. S. N.

As carbolic acid is exciting so much attention at the present time, I will give my experience with that article in the treatment of whitlows, boils, and abscesses. During the past year I have had an unusually large number of these cases on board ship, and being dissatisfied with the usual mode of treatment, I determined to try the effect of carbolic acid. This I did by making a free opening so soon as fluctuation could be detected, and when all of the pus had been discharged by gentle pressure, I either injected or swabbed out the cavity with the ordinary liquid carbolic acid of the shops, after which I applied a cold water-dressing. By this treatment further suppuration was prevented, and the wound healed so rapidly that the patient returned to duty in two or three days.

In some cases, after evacuating the pus, and using the acid, I drew the edges of the wound together with isinglass plaster, and in twenty four hours it entirely healed. My experience, so far, has been with ordinary *undiluted* liquid carbolic acid (not carboline), and the results have been so satisfactory that it deserves a trial in similar cases. In the treatment of gonorrhœa, I have not been satisfied with the liquid carbolic acid. As an injection it caused too much pain, and seemed to aggravate the symptoms when used even in the proportion of two to five drops to the ounce of water. These objections, it is said, do not apply to the crystallized acid of Merck, or the chemically pure article of Calvert, which may be used for this purpose in the proportion of two to five grains to the ounce of oil of almonds, or diluted glycerine.

U. S. SARATOGA, July 29, 1868.

Tetanus following Amputation of Forearm successfully treated by Bromide of Potassium. By HENRY F. ANDREWS, M. D., Washington, Geo.

July 16. I amputated the forearm of a negro man, æt. about forty, on account of an injury from a threshing machine, crushing right hand and wrist, about three inches above the wrist-joint. The case did very well until August 9. On the 10th of August I was sent for, when he had well-marked tetanus. He stated that he had been suffering for several days with pains, though not severe, through the chest. On the 9th tetanic spasms came on, from which he suffered much, and had slept little or none the night previously. His jaws were almost immovable; great muscular rigidity, especially in the muscles of the abdomen, neck, and back; pulse about 100; skin bathed in cool perspiration; tongue furred; bowels constipated. The spasms were frequent, violent, and accompanied by a slight bending of the body backward. The stump had united perfectly, except at the point where the ligatures passed out. I made considerable traction on the ligatures to remove them, but failed. Ordered the bromide

of potassium, thirty grains, to be repeated in doses of twenty grains every two hours.

August 11. Much relieved; had no spasms during the night; slept several hours; spasms returned an hour or two before my visit, but they are not so violent, and the intervals between them are much longer; is very drowsy, falls asleep occasionally between the paroxysms. Directed the bromide to be given every three hours; ligatures still immovable.

13*th*. Very great improvement; is sitting up; has had no paroxysm since the evening of the 11th; has slept a great deal, and feels very drowsy all the time; has had a small action from bowels; still some muscular rigidity remaining. Removed the ligatures, though with considerable difficulty, and a slight paroxysm occurred while making traction on the ligature around the radial artery. Directed the bromide every four hours, but if the spasms return, to take it every two hours again.

14*th*. Still improving; sleeps well; appetite good; has had two healthy actions from bowels in the course of the day. Bromide to be given at still longer intervals.

17*th*. The only evidence remaining of the disease is some muscular soreness, and a slight stiffness about the jaws; has had two actions daily since the 13th. Directed the bromide three times a day for a few days longer, unless there should be a return of the symptoms, in which case it is to be taken as at first.

He steadily improved, and at present, August 23, has not a symptom of the disease. I think it probable that the ligatures remaining so long was the exciting cause of the disease, and that they were probably not drawn sufficiently tight at the time of the operation.

Case of Traumatic Tetanus; Recovery. By HENRY L. BURTON, M. D., of Somerville, Fayette Co., Tenn.

Feb. 9, 1868. I was called to see a large muscular negro man, of good constitution, æt. about 45, who had been wounded a few hours previously by the bursting of a shot gun. The thumb of the left hand was dreadfully lacerated and torn up to the articulation of its metacarpal bone with the trapezium, a portion of which was also broken off; skin and fascia of almost the entire back of the hand torn up and hanging by a narrow strip; hemorrhage very slight. The thumb was removed, and the edges of the wound, after thorough washing, brought together as well as its ragged nature would admit, secured by sutures, adhesive strips and bandage, and cold water with a little laudanum applied. Morphia was given to quiet restlessness, and magnesia sulph. to open the bowels when necessary. The wound did remarkably well, except some little sloughing with very fetid discharge, which was counteracted by dressings of sol. chlorin. soda, and the patient seemed in good condition generally till March 5, when I was sent for in great haste to see him, and found him leaning against the side of his bed, bathed in profuse perspiration, with a countenance indicative of intense agony; tetanic spams recurring every few minutes, and with such intensity when he attempted to move, that it was with great difficulty I could get him to change his position. He complained of very great pain in the left groin, from which point he said all of his spasms seemed to start, the "cramps" extending thence upward, over the entire abdomen, and downward into the lower extremities. There was tonic contraction of all the abdominal muscles which were hard and knotted; pulse, 128.

He informed me that he had had some slight cramps for a day or two, but took little notice of them until about 11 o'clock on that day (5th), when he was seized, while sitting up, with severe pain in his groin, which soon extended, with violent cramps, to the entire body, drawing him forcibly backwards. I was informed by my friend, Dr. R. H. Harvey, who was on the place at the time, and kindly called in to see the patient, that there was decided opisthotonos in this attack. He administered chloroform, which relieved the paroxysm, and the patient slept for an hour or two. On awaking the spasms returned, but only involved the abdominal muscles and legs as described above. His bowels had become very much constipated; had taken a large dose of oil and turpentine nine hours before my visit without effect. I administered a large enema, which came away without any fecal matter. Ordered cloths wrung out of hot water to be applied to the abdomen, and gave calomel, gr. xij; jalap, gr. xv; tart. ant., gr. j, with a liberal dose of morphia to be taken soon afterwards.

March 6. More quiet; had had two free, dark, and offensive actions from bowels, and slept some in latter part of night. Abdomen still rigid and knotted, but less cramp in the legs; respiration natural and easy; pulse 88; repeated calomel and jalap āā gr. x, with tart. ant. gr. j, and ordered morphia, gr. $\frac{1}{3}$, with $\frac{1}{4}$ gr. of tart. ant., to be given so as to keep patient steadily under influence of the opiate. Wound not painful, but dry; warm water-dressings to restore suppuration. From this time until March 10, there was some diminution in the force and frequency of the paroxysms, and the patient rested tolerably well at night; but there was very little relaxation of the abdominal muscles. The morphia had been regularly continued, with occasionally calomel and tart. emetic; bowels kept in good condition, and wound suppurating more freely. On the 10th applied a blister to almost the entire length of the spine, hoping for some benefit from counter-irritation. Up to 3 P. M. of the 12th there seemed to be a considerable change for the better; paroxysms rarely coming on, except when he attempted to change his position, when light spasms seized him. Bowels had again become constipated, for which he had taken oil and turpentine at 12 M. on the 12th, and he was ordered to take 10 grs. each of calomel and jalap at bedtime, if his bowels should not be moved; morphia continued. At 11 P. M. I was called in haste to see him, and found that he had had another severe paroxysm about 10 o'clock, which lasted nearly an hour, with very slight remissions, but finally yielded after taking liberal doses of morphia at short intervals; bowels not moved for thirty-six hours; abdomen very rigid; paroxysms short but frequent; pulse 110. Administered enema of turpentine, which produced one good action, and gave $\frac{3}{4}$ gr. of morphia, and ordered the dose repeated so as to keep him fully under its influence.

13*th*. 7 A. M. Patient resting quietly; had slept some in latter part of night, and paroxysms were much diminished in frequency and force; pulse 90; bowels not moved since action from enema; ordered calomel and jalap, 10 grs. each, and continued the morphia, with calomel 2 grs. and tart. ant. $\frac{1}{4}$ gr., every three hours; wound looking well; warm water-dressing continued, and touched it freely with argenti nit.

15*th*. Some improvement; paroxysms not so frequent; bowels in good condition; pulse 94; respiration natural. But there is still a good deal of rigidity of abdominal muscles, and tendency to cramp in lower ex-

tremities excited on the slightest motion; wound suppurating freely. Continued morphia and calomel, and reapplied blister to spine.

16*th.* Had a good night's rest, and is nearly free from paroxysms; bowels moving rather freely; pulse 112. Wound doing tolerably well. Left off calomel and continued morphia. Dr. Harvey saw the case with me this morning, and suggested the poultice with laudanum, instead of the warm water-dressing to the wound.

17*th.* Entirely free from spasms, except that some rigidity of abdominal muscles still remains; bowels moving so freely as to call for use of opium and sugar of lead, which soon controlled them. Pulse this morning only 90, notwithstanding violent disturbance of bowels.

18*th.* Entirely free from spasm; good deal of soreness in the muscles, that have been involved with some contraction of abdominal muscles on pressure. From this time on there was a steady but gradual improvement, and the patient made a good recovery.

During the progress of this case there was never any pain in the wounded limb, the patient referring to the left groin as his point of greatest suffering, and the starting point of all his paroxysms. The pulse varied from day to day, from 80 to 128 beats to the minute, without any apparent corresponding change in the general condition of the patient.

April 15, 1868.

Case of Gunshot Wound of the Chest. By D. N. RANKIN, M. D., Physician to Western Penitentiary of Pennsylvania.

About half-past seven o'clock P. M., January 1, 1868, I was hastily summoned to see Charles B., aged twenty-one years, in sound health and of robust constitution, who had, about half an hour previously, received a pistol-shot wound, the ball entering the side of his chest, between the second and third ribs. The shock almost immediately prostrated him, and his system did not fully react until the following morning. Dr. Alcorn, who resides in the vicinity, was called in. We had him raised to the semi-erect position, which he had been occupying when the injury was received. Upon a careful examination it was discovered that the ball had entered the chest at a point about two inches below the left axilla, between the second and third ribs, passed through the pleura costalis, and, we presumed, was located in the cavity of the pleura; for if it had wounded the lung itself, it would have produced collapse of that organ, expectoration of bloody, frothy, exudation, etc. and considerable cough, all of which were absent; but he complained of considerable pain in the left diaphragmatic region. The wound was at once closed with a compress and bandage, and a tablespoonful of brandy, and a teaspoonful of laudanum, exhibited every half hour, to be continued until reaction should take place; at the same time the usual means for bringing about reaction were used externally, with vigour. Next morning violent reaction had taken place; pulse 130 per minute, full and bounding; hot skin, with considerable pain in the side, and cough. We bled him from the arm to the amount of twenty ounces, and prescribed: ℞. Hydrarg. chl. mite gr. x; pulv. Doveri gr. xv. M. div. in pulv. v. S.—one to be taken every three hours, and, four hours after the last powder, three compound cathartic pills. Also, ℞. Tr. verat. viride, syr. scillæ, āā ℥ss. M. S.—ten drops every two hours. At 5 P. M. his pulse was reduced to 90, soft, and com-

pressible; skin moist, pain less severe; some nausea. Tr. digitalis, in doses of fifteen drops, was substituted for the verat. viride and squills, with very good effect.

At 9 o'clock A. M. on the 3d inst. we found him comparatively comfortable, the pulse being reduced to 80 per minute; skin moist; tongue clean; not much pain, unless he takes a deep inspiration. At 9 A. M. of the 4th inst., at the request of the family, I brought Dr. Trevor to see the case with Dr. A. and myself, and at my own suggestion we turned the case over to Dr. Trevor, he being the regular family physician. I did not see the case again, but was informed by Dr. Trevor that not a single bad symptom had made its appearance since the 4th inst., and that the patient was able to resume his employment as a plumber, in ten or twelve days after the reception of the accident.

ALLEGHANY CITY, PA., April 9, 1868.

Case of Peurperal Eclampsia. By O. POMROY, M. D., of Chardon, Geauga Co., Ohio.

February 8, 1868, 4 P. M., was called to see Mrs. H., aged 17, primipara. Found her unconscious, breathing stertorous; had convulsions since 8 o'clock in the morning, in all twenty-seven, the longest interval being twenty minutes. The physician in attendance stated that labour had not advanced since the first convulsion, and that his treatment had consisted in pouring a little ether on patient's head and the administration of some sanguinaria and lobelia by the mouth, of which she had swallowed but little. Pulse 120, small and hard; head hot; pupils much dilated and insensible to light. I opened a vein in left arm and took ℥viij when the blood ceased to flow and she went into another convulsion, which lasted about five minutes. As soon as the circulation was sufficiently reestablished, I opened a vein in the right arm from which ℥xxiv was obtained, with the effect of softening the pulse and improving her respiration. Ordered head to be packed in bags of snow, and administered at once the following: ℞. Tinct. veratri viridis gtt. xv, water ℥j, which I succeeded in getting her, with much difficulty, to swallow. In thirty minutes, from the last she had another fit, which was much lighter, lasting only about one minute. On examination found the os dilated to the size of a half dollar and very dilatable; administered ℥ij wine of ergot. The presentation was in the first vertex position. At 55 minutes from the last convulsion, she had another very slight one, which was the last. Labour-pains came on quite vigorously, and she was delivered at the end of two hours of a stillborn well-developed male child; the placenta followed in 15 minutes; uterus contracting; no hemorrhage; respiration has improved since last fit, and now breathes quite naturally; has nausea, and has vomited some; is still unconscious and very restless, throwing herself about violently; I ordered the following: ℞. Morph. sulph. gr. ij, ipecac gr. viij. Divide into 8 powders. S.—Take one every hour until more quiet, and then extend the time to four or five hours.

9th. 11 o'clock A. M. Still unconscious; had been restless nearly constantly since I left in the night, and had slept but little; had been feverish. Pulse 110; pupils yet much dilated, and insensible to light; head hot. Ordered her head to be placed again in the snow and the following to be given: ℞. Verat. virid. gtt. xxx, aquæ ℥vj. ft. mist. Sig. ℥j every three hours. Also, ℞. Acetat. potassæ ℥iv; syrup. simpl. ℥ij.

Misce. S.—A dessertspoonful every four hours, alternating with the above.

10*th*. 10 o'clock A. M. Still unconscious; pupils yet insensible to light and dilated. Urine has been voided in bed and quite profusely. Pulse 60, soft; skin cool and pleasant; head cool; discontinued the snow; continued the other treatment.

11*th*. 10 o'clock A. M. More conscious this morning; says she can see a little, but everything looks misty. Speaks rationally for the first time; got her to protrude her tongue; it is much swollen and badly lacerated, covered with a thick yellow fur; was somewhat delirious during night. Pulse 60; skin pleasant; head cool; lochia, which has been suppressed, is now natural. Ordered an enema and continued treatment.

12*th*. 10 o'clock A. M. Has been more comfortable since last visit; Slept much last night, has some appetite; has not inquired for her child; was asked if she knew that she had been confined; said she did not know anything about it, but supposed she had been. Pulse 100, and rapid. Breasts tender, bowels have acted twice freely. Continued treatment with slight increase of the verat. virid. Has had no nausea since the first night of sickness.

13*th*. 10 o'clock A. M. Feels much better, passed a comfortable night. Pulse 112, and weak; milk secretion established. Discontinued the veratrum and substituted whiskey ʒj, each hour; continued potassa.

14*th*. Same as yesterday; passed a good night. Pulse 112. Continued whiskey; left off potassa and substituted the following: ℞. Quiniæ sulph. gr. viij, pulvis opii gr. ij. Misce, and make 8 powders. S.—One every four hours.

19*th*. Convalescent; feels much stronger to-day. Continued treatment. Appetite good.

20*th*. 5 o'clock A. M. Was called in great haste; found her much prostrated; had not slept any during night; was taken about 10 P. M. with diarrhœa, accompanied with tormina and tenesmus; bowels had acted fifteen times during night. Pulse 128, small, frequent and weak; had had several attacks of syncope; feet cold; skin relaxed and perspiring. Ordered whiskey ʒj, each half hour, also the following: Opii pulveris gr. ½, quiniæ sulph. gr. ij, to be taken every three hours.

5 o'clock P. M. Has slept none during day; bowels have not acted since visit in morning; is quite restless; wants to talk all the time; is a little inclined to delirium at times. Pulse 120, rather more full than in morning. Continued treatment. At 10 P. M. was called again. Had had a chill; was sweating profusely; had slept none; was very restless. Pulse 140, small and weak. Increased stimulants and anodynes.

21*st*. 8 A. M. Slept some after midnight; feels more comfortable this morning; sweating less profuse. Pulse 130, more full. Procured a better article of whiskey, and ordered ʒij each half hour; continued quinia and opium, gr. ij of the former and gr. ¼ of the latter. 4 o'clock P. M. Is much more comfortable; slept considerable; has had no fainting spells since change of stimulant. Pulse 112, quite full; does not sweat much. Continued treatment.

22*d*. 10 o'clock A. M. Better. Pulse 100, full and regular; does not sweat at all; skin cool and pleasant. Treatment continued.

24*th*. Is gaining strength; tongue begins to clean. Pulse soft and full,

100; rests well at night; convalescence is becoming established. Continued treatment.

26*th*. Improving; tongue has cleaned. Pulse 85, full; bowels have not acted for three days. Ordered oil ricini ℥j, to be taken at once and repeated if necessary. Continued stimulants and tonics.

29*th*. Is much better, bowels acted twice from the oil. Pulse 75; appetite better; is gaining strength, but cannot sit up yet.

March 5. Is gaining strength fast; can sit up an hour at a time. Ordered quinia gr. ij, whiskey ℥ij, three times a day.

April 1. Well and able to attend her household duties.

Treatment of Fractures by Extension by Means of Weights and Pulleys.—Several surgeons have of late laid claims to having devised this method, which, however, seems to be as old as Hildanus, who describes (*Opera*, p. 47) an apparatus for that purpose. It is but justice to our former contributor, Dr. WILLIAM C. DANIELL, then of Savannah, Geo., to call attention to the fact that he employed it half a century ago; so that he has precedence of all modern claimants. In a paper in this Journal (vol. iv. p. 330) he relates two cases successfully treated by him by this method, one in 1819, the other in 1824, and figures the apparatus which he devised. We have reason to believe that Dr. D. never saw Hildanus' work, and that the method was the offspring of his own ingenuity.—ED.

Gunshot Wound Healed by the First Intention. By WM. M. FINDLEY, M. D., of Altoona, Pa.

Having noticed in the *British and Foreign Medico-Chirurgical Review* for April last, page 512, an account by Prof. Simon of the healing of penetrating wounds (gunshot) by the first intention, it has appeared to me that the following case of gunshot wound involving both bone tissue and soft parts, which was followed by the same result, may be worth recording:—

Mr. A. K., German, middle aged, good health, in handling a small pocket pistol, which he did not know was loaded, accidentally discharged one barrel, the ball, called by sportsmen a double B, passed directly through from the palmar to the dorsal surface of the proximal phalanx of the little finger on the right hand, lodging somewhere in the room. The wound was compound and comminuted, both; the phalanx being broken off and each fragment split up some distance; very little hemorrhage; no vessel of any importance was wounded. Saw it immediately, and ordered warm water dressings, which were kept constantly applied for some ten days. It progressed favourably, and the external wound cicatrized, and during the entire time neither myself nor the gentleman saw one drop of pus or any discharge, except a little blood the first day or two. This occurred in April last, and at the present writing the finger is "as good as ever," he says, except that it is about one-third thicker than the corresponding one, but the excessive callus is being rapidly absorbed. The joint between the first and second phalanges is somewhat stiffened.

DOMESTIC SUMMARY.

Placenta Prævia.—The *American Journal of Obstetrics* for May last contains an account, by Prof. T. G. THOMAS, of eight cases of this accident, which,

according to Sir James Simpson, causes a mortality of one-third of the mothers and over one-half of the children.

The reasons of this great mortality Prof. Thomas believes to be :—

"1st. The dilatation of the cervix for the passage of the child unavoidably exposes both mother and infant to great danger from placental detachment and hemorrhage.

"2d. Repeated hemorrhages occurring during the ninth month, as the os internum dilates under the influence of painless uterine contractions, which then occur, the woman at the time of labour is usually exsanguinated, exhausted, and depressed both physically and mentally.

"3d. Profuse flooding generally occurring with the commencement of labour, the medical attendant is often not at hand, and reaches his patient only after a serious loss of blood has occurred.

"The dangers attendant upon the condition develop themselves most markedly in the first stage of labour, and death not infrequently occurs before the os externum is dilated to a size not greater than a Spanish dollar. At this time surgical interference, if resorted to to accomplish delivery, often destroys the lives which it is intended to save. The hand forced too soon through a rigid os will often rupture its walls, while a delay without the adoption of the means capable of controlling hemorrhage will necessarily favour the occurrence of a fatal result.

"On the other hand, should full dilatation of the os have taken place, and the patient be exhausted from sanguineous loss, the practice of rapid artificial delivery will not rarely be followed by fatal prostration."

Prof. T. is convinced that when it becomes the recognized practice to resort to premature delivery as a prophylatic measure in these cases that the mortality will be diminished. "By resorting to this measure," he says, "we should be dealing with a woman who is not exhausted by repeated hemorrhages; the obstetrician would be in attendance at the commencement of the labour; and he would be able by hydrostatic pressure to control flooding, while the same pressure accomplished rapidly and certainly the first stage of labour.

"When this step has not been deemed advisable, or from any cause labour has absolutely set in complicated by unavoidable hemorrhage, there are two plans by which we may endeavour to save the lives of mother and child.

"1st. We may alter the state of affairs at the cervix so that dilatation may occur without hemorrhage.

"2d. We may hasten the delivery of the child so as to render a *gradual dilatation* of the cervix unnecessary.

"The means at our command for accomplishing these indications may thus be tabulated and presented at a glance :—

"*Means for preventing Hemorrhage while the Os dilates.*—1. Distension of cervix by bags of water; 2. Evacuation of liquor amnii; 3. Partial detachment of placenta; 4. Complete detachment of placenta; 5. The tampon or colpeurynter.

"*Means for hastening Delivery of Child.*—1. Ergot; 2. Version; 3. Forceps; 4. Craniotomy."

Acupressure and its Effects.—Dr. HUTCHINSON presented to the New York Pathological Society, January 22, 1868, some specimens illustrating the effects of acupressure on the arteries of sheep, dogs, and men, and remarked that "these specimens, in company with those presented at a previous meeting, comprise my experience with acupressure. It has been employed in twenty-eight arteries in man and five or six in the lower animals. Among other operations in which it was employed were, two amputations of the leg, one at knee-joint and one of foot, and one of wound in the radial artery—which latter, by the way, illustrated the value of acupressure in a striking manner. The patient had suffered from an extensive lacerated wound in the lower part of the forearm and hand, and, several days after, sloughing took place followed by hemorrhage from the radial artery. The bleeding was very profuse, so much so that the patient lost a pint and a half of blood in a very few minutes. The artery was exposed in the midst of sloughing tissue. The tourniquet had been applied and also the persulphate of iron; these

were, however, removed and acupressure needles slipped under the artery above and below, with the effect of arresting the hemorrhage in an instant. The needles were removed at the end of twenty-two hours. The following day the patient had hemorrhage from the superficialis volæ from the same cause. The blood oozed out very freely, and a considerable quantity was lost before the house-surgeon could arrive to arrest it. This Dr. Eldridge did by the method of acupressure with a very satisfactory result. This latter needle was removed at the end of twenty-seven hours. These two cases illustrate very strongly the value of acupressure in certain cases. I believe that if a ligature had been applied premature sloughing might have resulted, with its attendant hemorrhage. In either case, in order to prevent this occurrence, it would have been necessary to have applied a ligature in sound tissue above and below the wound, to have made a very long, tedious, and unsatisfactory dissection, with the result, as before stated, of having secondary hemorrhage afterwards.

"The value of acupressure is, of course, not fully known. Yet it has been demonstrated that we can by these means certainly arrest hemorrhage. I am disposed to think that secondary hemorrhage is less apt to occur after it than after ligature. It is very well known that secondary hemorrhage, from some peculiarity of the constitution, does not form a firm enough clot before the ligature separates. Then, again, it occurs as the result of ulcerations of the arteries prematurely and from sloughing, which not infrequently extends beyond the seat of the plug. By means of acupressure we simply compress the coats of the artery together; no violence is used, the coats are not disturbed at all, and there is on that account less liability to secondary hemorrhage."—*The Medical Record*, May 1, 1868.

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Pathology and Treatment of Croup.—Dr. A. Jacobi, in an elaborate article (*American Journal of Obstetrics*, May, 1868), states that he has performed tracheotomy for croup on 67 children, of which 13 recovered. 38 of these were on boys, of whom 8 recovered; and 29 on girls, of whom 5 recovered; giving a percentage of recoveries of 19½ per cent. This mortality appears, he says, more unfavourable than it really is, as five of the operations were made on individuals who were either dead or dying, and in whom the indication for an operation had passed by. Deducing these, the recoveries would be 13 out of 62 operations, or 21 per cent.

Of Dr. J.'s patients, "one was of the age of 1 year 1 month; one, 1 year 3 months; one, 1 year 7 months; one, 1 year 10 months; five, 2 to 2½ years; nine, 2½ to 3 years; sixteen, 3 to 4 years; twenty-three, 4 to 5 years; seven, 5 to 6 years; two, 7 to 8 years; and one 10 years.

"Recoveries took place:—

1	at the age of	2½	to	3	years,	1	out of	5	operations,	= 20 per cent.
3	"	3	"	4	"	1	"	16	"	= 19 "
7	"	4	"	5	"	1	"	23	"	= 30 "
2	"	5	"	6	"	1	"	7	"	= 28 4-7 "

"The after-treatment in some of these cases was protracted, and therefore the tube had to remain in some a pretty long time. It was removed in two cases on the 17th day, one on the 18th, one on the 20th, one on the 27th, one on the 29th, one on the 30th, two on the 35th, one on the 42d, one on the 44th, one on the 46th, and one on the 54th day.

"The cause of the long duration of the after-treatment was in four cases of a peculiar nature. It was found that in the second week after operation, the larynx having expelled the macerated membranes, would resume its functions, and the patient breathe normally through the tube and its upper fenestra, and the larynx, the anterior opening of the tube having been closed by a cork. But the removal of the tube from the trachea gave rise to instantaneous attacks of dyspnœa and suffocation, which were instantly removed again by the replacing of the tube. This occurrence would take place so regularly, that the patients would not admit the removal of the tube afterward. The cause of this strange and unsatisfactory occurrence, was found to be the presence of polypoid excrescences, sometimes numerous, of the size of a pin's head to that of a pea and more, originating on

the margin of the tracheal wound, in one case on the lower portion of the sore larynx itself. It required a great many applications of nitrate of silver, or subsulphate of iron, to destroy them; their disappearance would instantly relieve the symptoms and allow of the final removal of the tube from the trachea."

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Spontaneous Subsidence of an Ovarian Tumour.—Dr. SAMUEL MITCHELL, of Cameron Mills, New York, records (*New York Med. Journ.*, May, 1868) a very remarkable case under this caption. The subject of it was about forty years of age, with a tumour occupying nearly the whole abdominal cavity; multilocular and unusually hard. When first observed, about two years before, it was about the size of an egg, and situated in the region of the right ovary. There was and had been but little pain or tenderness; general health but little impaired. Dr. M. diagnosticated an ovarian tumour, and in December, 1858, Dr. F. H. HAMILTON saw her in consultation, with the view of performing ovariotomy. "After a careful examination of the case, in view of the comparatively comfortable state of health of the patient, the inestimable value that a few years of life would be in rearing her family of little girls, and the great risk necessarily attending the operation, he decided not to operate. I have seen her occasionally since that time. There was a steady increase in size in the tumour until within the last two years. It got to be very burdensome from its great size and weight. The only way she could keep about was by wearing a strong bandage with shoulder-straps. She continued to have fair health, has never been tapped or taken any medicine for it. A few weeks since I met her in the street, not having seen her for nearly two years. She was so much diminished in size I was quite uncertain about her identity. I learned upon inquiry of her that she had ceased to menstruate within two years, since which the tumour had steadily decreased in size, and was now about the size of a small child's head, quite hard, and rather firmly fixed. She has no pain, and says she is well, and is doing her own housework. She added, 'Tell Dr. Hamilton I have lived to raise up my girls, and to see them happily married and settled in life, and I am feeling better than when he so mercifully spared me the operation.'"

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Dislocation of the Hip-joint reduced by making the Femur a Lever acting upon a Fulcrum placed in the Groin.—Dr. GEO. SUTTON, of Aurora, Ind., relates (*Western Journ. Med. and Surg.*, Sept. 1868) a case of this in a strong healthy boy, eight years of age, whose clothes being caught in some machinery, he was thrown over with great violence. On examination, Dr. S. at once detected dislocation at the right hip-joint. The limb was shortened, toes inverted, and the head of the femur could be distinctly felt resting high on the dorsum of the ilium. Dr. S. at once attempted reduction by Reed's plan, but not succeeding immediately in getting the bone over the rim of the acetabulum, he placed a roll of cloth of the proper size in the groin, partly resting against the anterior portion of the ilium. "This was held firmly in its proper place, while the limb was gently flexed upon the abdomen over the support which acted as a fulcrum; this raised the head of the femur and prevented it from rolling from the desired position, and by gently moving the limb outwards, and at the same time raising the leg, when I had it in the desired position, I had the pleasure to hear the bone glide into the socket with the noise usually heard at the time when dislocations of the femur are reduced. All motion of the joint was now free and unattended with pain, and the boy declared that he was well. The usual after treatment was resorted to, and in five weeks he had entirely recovered and was walking without the least lameness."

—

Strangulated Hernia operated on without opening the Sac.—Dr. ERSKINE MASON relates (*The Medical Record*, Aug. 1, 1868) five cases of this for the purpose of showing the readiness, even in small, as well as in large hernia, with which the operation of not opening the sac can be performed, as well as its giving promise of far better success, than when the sac has been opened, the gut exposed to the air, and subjected to handling. "So seldom," he remarks, "do we find the stricture to be contained inside the sac, and so rarely does real necessity occur for the opening of its peritoneal covering, that I think we can

rarely be justified in choosing any other operation than the one advocated in this paper. It has been contended by some, that this operation might lead to the reduction of the gut, when in a gangrenous condition. This objection, it appears to me, might be used with equal justice against the employment of any means to effect reduction short of a cutting operation. Should the contents of the sac be such as to forbid their reduction, this could be determined both by the eye and by the sense of smell, in the majority of cases, without wounding the sac. If not, then it would be time enough to resort to the old method of operation.

"In one case we were tempted to resort to this practice from the dark appearance of the intestine, and portions of the sac, but warm applications by means of sponges wrung out in hot water proved sufficient, after the stricture was divided, to restore the parts to their normal appearance. The majority of deaths occurring after the operation for strangulated hernia, are due to peritonitis, and this certainly seems far more likely to follow after the sac, which is so often inflamed, is wounded, and the intestines and omentum subjected to digital manipulation, than where these are carefully protected from such exciting causes. Again, should any vessels, as the epigastric or obturator, become wounded, the risk of hemorrhage taking place into the peritoneal cavity is avoided; and the patient's chances for recovery thus increased. Looking at these facts, and, as we shall show from statistics, the very favourable results of this operation, it seems surprising that surgeons should ever think of practising any other, when the case would at all admit of it. This operation is the one I believe now advocated by English surgeons, but as yet not so much practised in this country."

The Climate of Aiken, S. C.—Dr. W. F. Percival has published (*Med. Record*, July 1, 1868) some observations on this. Aiken, he says, is "in Barnwell District, S. C., 120 miles from Charleston, and sixteen miles from Augusta, Geo. It is situated at the western end of an elevated table land, containing an area of about twenty square miles. Its elevation is 600 feet above tide water, and 400 feet above the Savannah River at Augusta. The soil is sandy, with a substratum of siliceous red clay. This soil is exceedingly porous, no water being found at a less distance than from 80 to 125 feet. The water obtained from this depth is clear, with a temperature about 60° Fahr., slightly impregnated with iron, not enough, however, to affect its sensible properties.

"The drainage of this table land is effected through creeks, located from four to six miles at the nearest point, and with a depression of from 150 to 300 feet below the level of Aiken. It is surrounded for many miles with a growth of long-leaf pine and dwarf oak. From its great elevation and distance from watercourses, it is exempted from all malarial diseases, endemics are unknown, and epidemics exceedingly rare; when they do occur the type is very mild. The mean temperature of the winter months is 44°; that of the summer months 77°; the annual mean about 52° Fahr.

"The prevailing winds are from the south and southwest.

"As the hygrometric condition of the atmosphere is of material importance, I regret that I can give no observations by means of instruments, and must rely on comparative means as illustrative of dryness of atmosphere. Steel instruments do not rust when exposed, mur. soda, nit. potas., sulph. mag., etc., absorb but little moisture, and do not sensibly change, even when exposed for months. Facility of access and the avoidance of a long and tedious journey, are of great importance in the case of invalids.

"Aiken is within forty-seven hours' travel by railroad of New York, the South Carolina Railroad passing through the centre of the town. There are daily mails and telegraphic communication with all parts of the Union; and the comforts and luxuries of the large cities are readily obtained. Tuberculosis being the result or symptom of lowered vitality, and a depressed state of nervous power, and from the fact that a warm, moist atmosphere conduces to the softening of tuberculous deposits, and the supplementary action of the skin, which is always greatest in dry, elevated localities, and always least in moist climates, it seems useless to dwell upon the necessity of an elevated, moderately cold and dry locality, for the climatic treatment of tuberculosis. I will here give a state-

ment of the meteorological condition of places to which invalids are usually sent:—

"St. Augustine, Florida: elevation about 20 feet, situated on the shores of St. Angustine Bay. Winter mean, 58°; summer mean, 80°.

"Pilatka, on the St. John's River: elevation, 25 feet. Winter mean, 57°; summer mean, 80°.

"Jacksonville, on the St. John's River. Winter mean, 58°; summer mean, 82°.

"St. Paul's, Minnesota. Winter mean, 19°; summer mean, 68°.

"A comparison of the meteorological status and accessibility of Aiken, with the warm, moist climate of Florida, and the dry, but exceedingly cold climate of Minnesota, will, I think, recommend it to the attention of the medical profession."

The above statement, *so far as it goes*, is very favourable, but there are other points ever more important to invalids than mere climate, in regard to which information is desirable.

The chief advantage of a mild climate for consumptives, is that it enables them to live much in the open air, and to take exercise in walking, riding, or driving. We could wish to be informed whether the walks and drives in the neighbourhood are good and diversified, and whether horses and carriages are readily to be procured.

Good lodgings are essential. Can invalids obtain such in private families where they can enjoy some of the comforts of home and cheerful society; or must they be crowded into a large hotel, where the incessant coughing of others at night prevents sleep, and the constant association with fellow sufferers has a tendency to depress the spirits and beget despondency, the worst influence to which the consumptive invalid can be subjected? If the consumptives cannot in addition to a mild climate obtain suitable food, opportunities for out-door exercise, and be exempted from the baneful influences just hinted at, they had much better remain at home. To obtain a single advantage they may subject themselves to many counterbalancing evils.

Carbolic Acid in the Treatment of Conjunctivitis.—Dr. E. L. HOLMES states (*Chicago Medical Examiner*) that he has been induced to try the carbolic acid in diseases of the conjunctiva, and he says that he has "found in about a dozen cases, at the infirmary, both of acute and, especially, of chronic inflammation, that the patients made a good recovery under its use.

"It is doubtful whether it possesses any advantage over the ordinary astringents, and yet it may be a desirable agent in cases where the usual applications fail. In two cases of purulent conjunctivitis, its use between the applications of nitrate of silver, after the latter had been tried two days, seemed to rapidly overcome the excessive discharge of pus. Possibly, its antiseptic properties may aid in destroying any specific poison that may exist.

"When applied, in a saturated solution, to the conjunctiva, as also to the mucous membrane of the mouth, it produces an intense burning pain, which almost invariably subsides in a few moments. It produces a thin, white pellicle on the surface where it is applied, which is soon cast off, leaving scarcely any irritation."

Pumpkin-seeds for Tapeworms.—The efficacy of pumpkin-seeds in removing tapeworms is not as generally recognized as it should be. Dr. D. B. HOFFMAN relates (*Pacific Medical and Surgical Journal*, Aug. 1868) a case in which an entire tapeworm, over six feet long, was discharged after the patient had taken a dose of pumpkin-seeds followed by castor oil with the oil of turpentine.

"*Liquid Oxysulphate of Iron.*—Dr. J. R. BLACK extols (*Cincinnati Lancet and Observer*, March, 1868) the following preparation, the formula for which was handed to him five years ago, by an old physician of Tennessee. ℞.—Ferri sulph. ʒij; acid. nitric. fʒiij; aq. destill. fʒiss. Rub the sulphate with the acid; slowly in a mortar, gradually add the water after the sulphate is all dissolved, and filter through paper. Dose, from six to twelve drops in water or quassia infusion or syrup. Dr. B. says that this is the most palatable of all the ferruginous preparations."

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